

CHAPTER ONE

Congestion Management Agency

The Alameda County Congestion Management Agency (CMA) was created by a Joint Powers Agreement (JPA), dated February 20, 1991, which became effective on May 28, 1991. The JPA has been amended twice since May of 1991 to revise the voting structure and to deal with quorum-related matters. The JPA specifies the composition of the CMA governing board, its functions, duties and powers and other administrative matters. The JPA also sets forth many objectives for the CMA, including the following general goals:

- Position Alameda County jurisdictions and transit operators to better compete for limited state and federal transportation dollars.
- Seek consensus on future improvements to major roads, freeways and transit services.
- Foster early communication among cities, the county and transit operators on transportation projects and issues and on the system of roadways and transit services designated in the CMP (CMP-network).

In January 1995, the CMA revised the Strategic Plan and included the following organizational goals:

- Provide effective service to local government, transit operators and other interests in Alameda County.
- Prepare periodic reports on activities and accomplishments.
- Continue to develop the CMA's position as a leader in transportation in the Bay Area.
- Secure reliable, ongoing funding and explore ways of doing business differently in order to provide a more cost-effective delivery of service.
- Foster cooperative relationships within the CMA member jurisdictions and with other groups, both formal and informal.
- Develop procedures to integrate CMA programs, such as the *Countywide Transportation Plan* and the Congestion Management Program (CMP).
- Develop new procedures and update existing procedures, as appropriate, to provide the CMA Board with appropriate management controls.
- Position the CMA to anticipate and respond effectively to new roles and responsibilities.

COMPOSITION OF THE CMA

Table 1 shows the voting structure of the CMA Board based on the current population in Alameda County. It is based on the following formula contained in the revised JPA:

- An initial vote for the Alameda County Board of Supervisors and each Alameda County city for every 50,000 population or fraction thereof;
- Additional votes shall accrue to the county and cities as each jurisdiction's population reaches the midpoint of the next highest increment of 50,000 (e.g., 25,001 or more); and
- One voting representative each for AC Transit and BART.

Each city's voting representation is adjusted according to the above formula following the publication of each national census or during the intervening periods using population estimates from the California Department of Finance.

VOTING

A majority of the authorized vote of the CMA Board is required in order to:

- Adopt or amend the CMP;
- Adopt a resolution of conformance or non-conformance with the adopted CMP;
- Approve or reject a deficiency plan that will address problems;
- Adopt or amend the *Countywide Transportation Plan*;
- Approve federal or state funding programs;
- Adopt the annual budget; or
- Levy fees or charges.

A majority vote of those present and voting is required for any other action.

FUNCTIONS AND RESPONSIBILITIES

The CMA has the following functions and responsibilities:

- Prepare, adopt, revise, amend, administer and implement the CMP, a 5-year program aimed at reducing congestion.
- Develop, adopt and update the *Countywide Transportation Plan*, the long-range (25 years) transportation plan for the county.
- Coordinate transportation planning and funding programs within Alameda County and with contiguous counties.
- Coordinate countywide input to:

- The California Clean Air Act and Transportation Control Measures of the Metropolitan Transportation Commission (MTC) and the Bay Area Air Quality Management District (BAAQMD)
- MTC guidelines for county transportation plans pursuant to Government Code Section 66531;
- MTC's *Regional Transportation Plan*;
- MTC's Regional Transportation Improvement Program (RTIP) and the California Transportation Commission's (CTC) State Transportation Improvement Program (STIP); and
- Prepare, adopt, update and administer the federal funding programs for Alameda County including the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality (CMAQ) Program.
- Levy and collect fees and charges, including administrative and operating costs.
- Seek state and federal funding to defray the cost of preparing, adopting, amending, administering and implementing the CMP and other CMA duties.
- Recommend projects for funding from the Alameda County share of the STIP, as specified in Senate Bill 45. In addition to recommending projects for funding, the CMA oversees project implementation to ensure that projects meet "timely use of funds" requirements and that no programmed funds are lost to Alameda County.

The CMA also acts as the program manager for the Transportation Fund for Clean Air (TFCA) in Alameda County. The TFCA program, which aims to reduce pollution by reducing the use of single-occupant vehicles, is funded through a \$4-per-vehicle registration fee and is managed by the BAAQMD. The law requires the Air District to allocate 40 percent of the revenue to each county. Other functions could be added by amendments to the JPA or by actions of the state or federal government. For more information on the CMA's committees, appeals process and administrative costs, see Appendix B.

Table 1 — Alameda County Congestion Management Agency Voting Structure
(based on population)

		Population*	# of
		(January 2009)	Votes
Alameda County (unincorporated area).....		139,880.....	3
Cities:	Alameda.....	74,683.....	1
	Albany.....	16,884.....	1
	Berkeley.....	107,178.....	2
	Dublin.....	47,922.....	1
	Emeryville.....	10,087.....	1
	Fremont.....	215,636.....	4
	Hayward.....	150,878.....	3
	Livermore.....	84,409.....	2
	Newark.....	44,035.....	1
	Oakland.....	425,068.....	9
	Piedmont.....	11,165.....	1
	Pleasanton.....	70,097.....	1
	San Leandro.....	82,472.....	2
	Union City.....	73,977.....	1
Transit Operators:	AC Transit.....	na.....	1
	BART.....	na.....	1
Total Population/Vote		1,537,719	35

* State Department of Finance estimates; received May 2009.

CHAPTER TWO

Designated Roadway System

To manage the transportation system, the CMA must first identify what is included in the system. California law requires that, at a minimum, the designated roadway system include all state highways and principal arterials.¹ Highways or roadways designated as part of the system shall not be removed from the system.

The statutes also refer to regional transportation systems as part of the required Land Use Analysis Program.² In the 1991 CMP, it was presumed that the roadway system designated in the CMP was the highway/street component of this regional transportation system. This changed with the passage of the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. ISTEA required MTC to develop a Metropolitan Transportation System (MTS) that included both transit and highways. When the MTS was developed in 1991, it included roadways recognized as ‘regionally significant’ and included all interstate highways, state routes, and portions of the street and road system operated and maintained by the local jurisdictions.

MTC contracted with the CMAs in the Bay Area to help develop the MTS and to use the CMPs to link land use decisions to the MTS. The 1993 Alameda County CMP made a distinction between the CMP-network and the MTS:

- The CMP-network is used to monitor conformance with the level of service (LOS) standards; and
- The MTS³ is used for the Land Use Analysis Program.

The primary objective of designating a CMP roadway system is to monitor performance in relation to established level-of-service standards. If standards are not being maintained on a specific roadway in the

¹ California Government Code Section 65089(b)(1)(A)

² California Government Code Section 65089(b)(4)

³ In 2005, MTC updated the MTS to include Rural Major Collector streets and higher based on the Federal Functional Classification System (FFCS). The updated MTS is used by MTC for the purposes of funding and programming as well as in estimating roadway maintenance needs. The updated MTS was reviewed by ACTAC during the 2009 CMP Update to determine its usefulness and applicability to the Land Use Analysis Program. Based on ACTAC’s input and discussions with MTC, it was determined that the updated MTS was not appropriate for the Land Use Analysis Program because it was too detailed for planning purposes and the previous version of the MTS would continue to be used.

designated system, actions must be taken to: address problems on that facility or plans must be developed to improve the overall LOS of the system and improve air quality.

The roadway system must be detailed enough to identify significant impacts, yet be manageable for administration. The advantage of designating a relatively detailed CMP roadway system is that it may be easier to establish a link between proposed development projects and their impact on the CMP system. However, too large a CMP system could become difficult and expensive for local agencies to monitor. The criteria established below attempt to strike this balance. The effectiveness of the system and the criteria that established it will be periodically reviewed to determine if changes are warranted.

RELATIONSHIP TO REGIONAL TRANSPORTATION PLAN

Given the statutory requirement that MTC must find the CMP consistent with the *Regional Transportation Plan* (RTP), the designated CMP system should be a subset of the MTS. This should help to ensure regional consistency among the various CMP-designated systems, particularly for facilities that cross county borders. The CMA's long-range *Countywide Transportation Plan* is the primary vehicle for coordination with the MTS. Continued coordination will be necessary to ensure consistency between Alameda County's CMP system and the MTS.

DESIGNATED CMP SYSTEM

Criteria

While the statutes require existing state highways be designated as part of the CMP system, they provide no guidance for which principal arterials should be included. After evaluating several possible methods, the 1991 CMP adopted an approach that provided for the systematic selection of principal arterials to include in the CMP-network.

The selected approach, which met MTC's expectations for a "reasonable" CMP network designation method, relies on a concept that is central to the CMP legislation—identifying a system that carries a majority of the vehicle trips countywide. Using the countywide travel model, an average daily traffic volume was identified that would produce a system of roadways carrying at least 70 percent of the vehicle miles traveled (VMT) countywide. This approach yielded an average daily traffic of roughly 30,000 vehicles per day as a minimum threshold. Additional criteria were included to refine the definition.

The following criteria are used to establish the designated CMP roadway system:

All State Highways

- If a route is relocated or removed from the State Highway System, it will be evaluated according to the principal arterial criteria to determine whether it should remain in the CMP system.

Inclusion of Principal Arterials (*Note: All four criteria must be met*)

- Must carry 30,000 vehicles per day (average daily traffic) for at least one mile;
- Must be a roadway with four or more lanes;
- Must be a major cross-town connector, traversing from one side of town to the opposite side; and
- Must connect at both ends to another CMP route, unless the route terminates at a major activity center.

Criteria Review

The CMA Board reviewed the criteria for adding roadways in April 2009 and found that it continued to meet the original criteria of capturing a significant amount of the system carrying the highest volume of travel. It was recommended that no changes be made to the criteria at this time, but that the criteria be reevaluated in the 2011 CMP Update in light of changing land use and traffic patterns that have occurred over the last 20 years to determine if a reasonable percentage of roadways continue to meet the criteria. In the 1991 CMP, the Countywide Travel Demand Model was used to identify an average daily traffic (ADT) volume that would produce a system of roadways carrying at least 70 percentage of the vehicle miles travelled (VMT) countywide. This approach yielded the criteria used today. It was recommended that this evaluation be redone for the 2011 CMP to help identify additional potential routes if appropriate.

The criteria for adding roadways (criteria for inclusion of Principal Arterials) to the CMP-network will continue to be reviewed every four years, with the next review occurring in the 2013CMP Update. Further, in view of the liability to remediate any LOS F condition for which no funding is available, until any additional funding or new financial sources become available, the current system of the jurisdictions proposing addition of new segments on a voluntary basis will continue. However, for the 2011 CMP, a re-evaluation of the criteria will also be done as described above.

The following procedure and schedule for adding roadways to the CMP-designated system and reviewing criteria was approved by the CMA Board. Criteria for adding roadways will be reviewed in one CMP update and the adopted criteria will be applied to identify potential routes in the subsequent CMP update. For identifying potential routes, the jurisdictions will review their roadway systems for routes that may meet the Criteria for Inclusion of Principal Arterials. For potential routes, each jurisdiction will conduct 24-hour traffic counts for a period including a Tuesday through Thursday of a typical week. Traffic counts should be taken around the first week in April 2011. Each jurisdiction must submit potential CMP-designated routes to the CMA by end of June 2011. The schedule is shown in Table 2.

The CMP System

Table 2 shows the schedule for review and update of designated routes on the CMP system. Table 3 lists the designated CMP system, including all state highways and principal arterials that satisfy the above

criteria. The entire CMP-designated system is illustrated in Figure 1 and detailed maps for each area within the county are shown in Figures 2 through 5. Characteristics of the CMP designated system determined in 1991 are as follows:

- It carried 72 percent of the countywide vehicle miles traveled (VMT).
- It contains 232 miles of roadways, of which: 134 miles (58 percent) are interstate freeways, 71 miles (31 percent) are state highways and 27 miles (11 percent) are city/county arterials.

The Metropolitan Transportation System designated by MTC is also shown in Figure 2 through Figure 5. The Metropolitan Transportation System transit corridors are shown in Figure 6 and Figure 7. The system includes the entire CMP-designated roadway system together with major arterials, transit services, rail, maritime ports, airports and transfer hubs that are critical to the region's movement of people and freight.

Changes to the CMP-network since 1991

The following changes were made to the CMP network after its initial adoption by the CMA Board in 1991:

- In 2003, Caltrans realigned State Route 84 (SR 84) in Livermore from 1st Street to Isabel Avenue-Airway Boulevard. Consequently, the new alignment was added to the CMP-network in 2005. The former SR 84 alignment along 1st Street in Livermore was evaluated to see whether it meets the Principal Arterial criteria to be retained on the CMP network. Based on the results of the analysis, the 2.2 miles segment between Inman Street and I-580 was retained on the CMP-network.
- In 2007, the City of Oakland conducted 24-hour traffic counts on Hegenberger Road between I-880 and Doolittle Drive. The traffic counts collected and other characteristics of the roadway met all the Principal Arterial criteria for inclusion in the CMP-network. Accordingly, a 1.7 mile segment of Hegenberger Road between I-880 and Doolittle Drive was added to the network.

Local Government Responsibilities

To be in conformance with the CMP, local jurisdictions must submit a list of potential CMP-designated routes based on 24-hour counts by spring 2011.

Table 2—Schedule for CMP-Designated System

TASK	WHO	WHEN
Re-evaluate Criteria for Adding Roadways	ACTAC/Board	June 2010
Identify Potential Routes	Jurisdictions	January 2011
Review Routes	ACTAC/Board	February 2011
Collect Traffic Data	Jurisdictions	March/April 2011
Review Data	ACTAC/Board	May 2011
Select CMP Designated Routes	ACTAC/Board	June 2011
Incorporate Routes in 2011 CMP	ACTAC/Board	June 2011
Review & Update Criteria for adding roadways	Jurisdictions/ACTAC/Board	June 2013

Note: Criteria for adding roadways will be reviewed in one CMP update and the adopted criteria will be applied to identify potential routes in the subsequent CMP update.

Table 3—CMP-Designated System, Route List

CITIES OF ALBANY AND BERKELEY

Route	From	To	Criteria ^{4 5}
SR-123 (San Pablo)	Contra Costa County line	Emeryville city limit	State Route
University Ave.	I-80	Milvia St.	Satisfies criteria
University Ave.	Milvia St.	Shattuck Ave.	Connectivity ⁶
Shattuck Ave.	University Ave.	Haste St.	Connectivity
Shattuck Ave.	Haste St.	Derby St.	Satisfies criteria
Adeline St.	Derby St.	MLK Jr. Way	Satisfies criteria
MLK Jr. Way	Adeline St.	Oakland city limit	Satisfies criteria
SR-13 (Ashby Ave)	I-80	Tunnel Rd.	State Route
SR-13 (Tunnel Rd)	Ashby Ave.	Oakland city limit	State Route
I-80/I-580	University	Central	State Route

⁴ Principal Arterial criteria Applied: a) must carry 30,000 average daily traffic for at least one mile; b) must be a 4- or more lane roadway; c) must be a major cross-town arterial, traversing from one side of town to the opposite side; and d) must connect to another CMP route or major activity center.

⁵ State highways and interstate freeways are included in their entirety within each jurisdiction and include all mileage within Alameda County.

⁶ “Connectivity” indicates that the segment has been included in the designated system to provide continuity and avoid stub ends.

CITY OF ALAMEDA

Route	From	To	Criteria
SR-61 (Doolittle Dr.)	Oakland city limit	Fernside Blvd.	State Route
SR-61 (Otis Dr.)	Fernside Blvd.	SR-61 (Broadway)	State Route
SR-61 (Broadway)	Otis Dr.	SR-61 (Encinal Ave.)	State Route
SR-61 (Encinal Ave.)	SR-61 (Broadway)	Sherman St.	State Route
SR-61 (Central Ave.)	Sherman St.	SR-260 (Webster St.)	State Route
SR-260 (Webster St.)	SR-61 (Central Ave.)	Posey/Webster tubes	State Route
SR-260 (Posey/ Webster tubes)	SR-260 (Webster St.)	Oakland city limit	State Route
Atlantic Ave.	SR-260 (Webster St.)	Poggi St.	Satisfies criteria
Atlantic Ave.	Poggi St.	Main St.	Connectivity
Park St.	Oakland city limit	Central Ave.	Satisfies criteria
Park St.	Central Ave.	SR-61 (Encinal Ave.)	Connectivity

CITIES OF EMERYVILLE, OAKLAND AND PIEDMONT

Route	From	To	Criteria
MLK Jr. Way	Berkeley city limit	SR-24	Satisfies criteria
SR-123 (San Pablo)	Berkeley city limit	35th St.	State Route
SR-13 (Tunnel Rd.)	Berkeley city limit	SR-24	State Route
SR-260 (Posey/ Webster tubes)	Alameda city limit	I-880	Satisfies criteria
23rd/29th Ave.	Alameda city limit	I-880	Satisfies criteria
SR-77 (42nd Ave.)	I-880	SR-185 (E. 14th St.)	State Route
SR-185 (E. 14th St.)	SR-77 (42nd Ave.)	San Leandro city limit	State Route
Hegenberger Rd.	I-880	Doolittle Dr.	Satisfies Criteria ⁷
Hegenberger Rd.	I-880	Hawley St.	Connectivity
Hegenberger Rd.	Hawley St.	SR-185 (E. 14th St.)	Satisfies criteria
SR-61 (Doolittle Dr.)	Alameda city limit	San Leandro city limit	State Route
SR-13	SR-24	I-580	State Route
SR-24	I-980	Contra Costa County line	State Route
I-80 ⁸	SF County Line	University Ave.	State Route
I-580	I-80	MacArthur Blvd.	State Route
I-880	I-980	Hegenberger Rd.	State Route
I-980	I-880	SR-24	State Route

⁷ Found to meet Principal Arterial criteria in 2007.

⁸ A portion of this route to the Emeryville border includes the city of Berkeley.

CITY OF SAN LEANDRO

Route	From	To	Criteria
SR-61 (Doolittle Dr.)	Oakland city limit	SR-61/112 (Davis St.)	State Route
SR-61/112 (Davis St.)	SR-61 (Doolittle Dr.)	SR-185 (E. 14th St.)	State Route
SR-185 (E. 14th St.)	Oakland city limit	Ashland (unincorp.)	State Route
150th Ave.	Hesperian Blvd.	I-580	Satisfies criteria
Hesperian Blvd.	SR-185 (E. 14th St.)	San Lorenzo (unincorp.)	Satisfies criteria
I-880 ⁹	Hegenberger Ave.	I-238	State Route
I-580 ¹⁰	MacArthur Blvd.	I-238	State Route

SAN LORENZO, CASTRO VALLEY, ASHLAND (unincorporated areas)

Route	From	To	Criteria
SR-185 (Mission Blvd.)	San Leandro city limit	Hayward city limit	State Route
Hesperian Blvd.	San Leandro city limit	Hayward city limit	Satisfies criteria
SR-238 (Foothill Blvd.)	I-238	Hayward city limit	State Route
I-880 ¹¹	I-238	A Street	State Route
I-238 ¹²	I-880	I-580	State Route
I-580 ¹³	I-238	I-680	State Route

⁹ A portion of this route to the San Leandro border includes the city of Oakland.

¹⁰ A portion of this route to the San Leandro border includes the cities of Hayward and Oakland.

¹¹ A portion of this route in the county includes the city of Hayward.

¹² A portion of this route in the county includes the city of San Leandro.

¹³ A portion of this route in the county includes the city of Pleasanton.

CITY OF HAYWARD

Route	From	To	Criteria
SR-185 (Mission Blvd.)	Ashland (unincorporated)	SR-92 (Jackson St.)	State Route
SR-92 (Jackson St.)	I-880	SR-185 (Mission Blvd.)	State Route
SR-238 (Foothill Blvd.)	Ashland (unincorporated)	SR-185 (Mission Blvd.)	State Route
SR-238 (Mission Blvd.)	SR-92 (Jackson St.)	Union City city limit	State Route
A Street	I-880	SR-238 (Foothill Blvd.)	Satisfies criteria
Hesperian Blvd.	San Lorenzo (unincorporated)	Tennyson Rd.	Satisfies criteria
Tennyson Rd.	Hesperian Blvd.	SR-238 (Mission Blvd.)	Satisfies criteria
SR-92	San Mateo County line	I-880	State Route
I-880 ¹⁴	A Street	Alvarado-Niles	State Route

CITIES OF UNION CITY, FREMONT AND NEWARK

Route	From	To	Criteria
SR-238 (Mission Blvd.)	Hayward city limit	I-680	State Route
Decoto Rd.	I-880	SR-238 (Mission Blvd.)	Satisfies criteria
Mowry Ave.	I-880	SR-84 (Peralta Blvd.)	Satisfies criteria
SR-262 (Mission Blvd.)	I-880	I-680	State Route
SR-84 (Thornton Ave.)	I-880	Fremont Blvd.	State Route
SR-84 (Fremont Blvd.)	SR-84 (Thornton Ave)	SR-84 (Peralta Blvd.)	State Route
SR-84 (Peralta Blvd.)	SR-84 (Fremont Blvd.)	SR-84 (Mowry Ave.)	State Route
SR-84 (Mowry Ave.)	SR-84 (Peralta Blvd.)	SR-238 (Mission Blvd.)	State Route
SR-84 (Niles Canyon)	SR-238 (Mission Blvd.)	I-680	State Route
SR-84	San Mateo County line	I-880	State Route
I-880	Alvarado-Niles	Dixon Landing	State Route
I-680	Scott Creek	SR-238	State Route

¹⁴ A portion of this route to the Hayward border includes the city of Union City.

CITIES OF PLEASANTON, DUBLIN, LIVERMORE AND UNINCORPORATED AREAS

Route	From	To	Criteria
SR-84 (Vallecitos) ¹⁵	I-680	SR-84 (Isabel Ave..)	State Route
SR-84 (Isabel Ave.) ¹²	SR-84 (Vallecitos Rd.)	SR-84 (Kitty Hawk Rd.)	State Route
SR-84 (Kitty Hawk Rd.) ¹²	SR-84 (Isabel Ave.)	SR-84 (Airway Blvd.)	State Route
SR-84 (Airway Blvd.) ¹²	SR-84 (Kitty Hawk Rd.)	I-580	State Route
1st Street ¹⁶	Inman St.	I-580	Satisfies criteria
I-580	I-680	I-205	State Route
I-680	SR-238	Alcosta Blvd.	State Route

¹⁵ New alignment of SR-84 by Caltrans in 2003.

¹⁶ A portion of old SR-84 alignment found to meet the Principal Arterial criteria.

Figure 1— Designated Countywide System Map

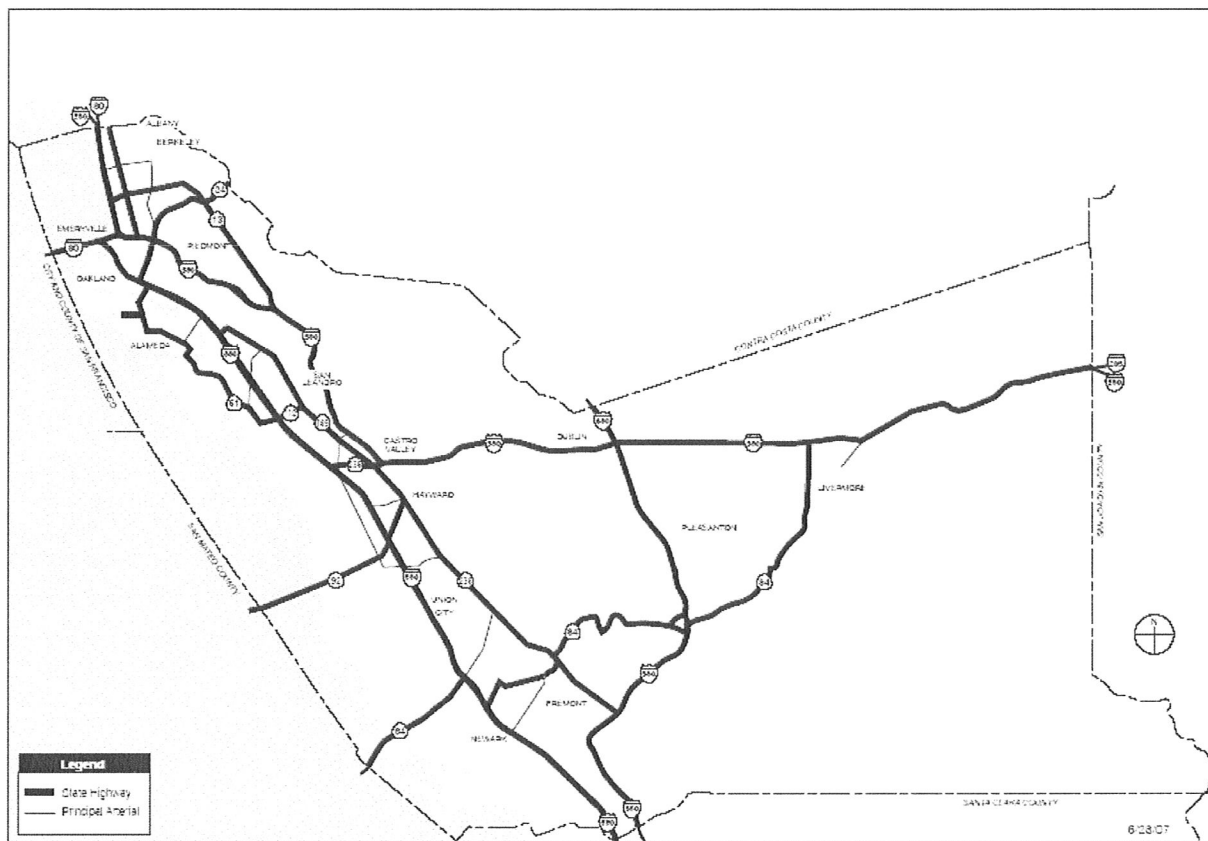


Figure 2—Designated System Map for Alameda, Albany, Berkeley, Emeryville, Oakland and Piedmont

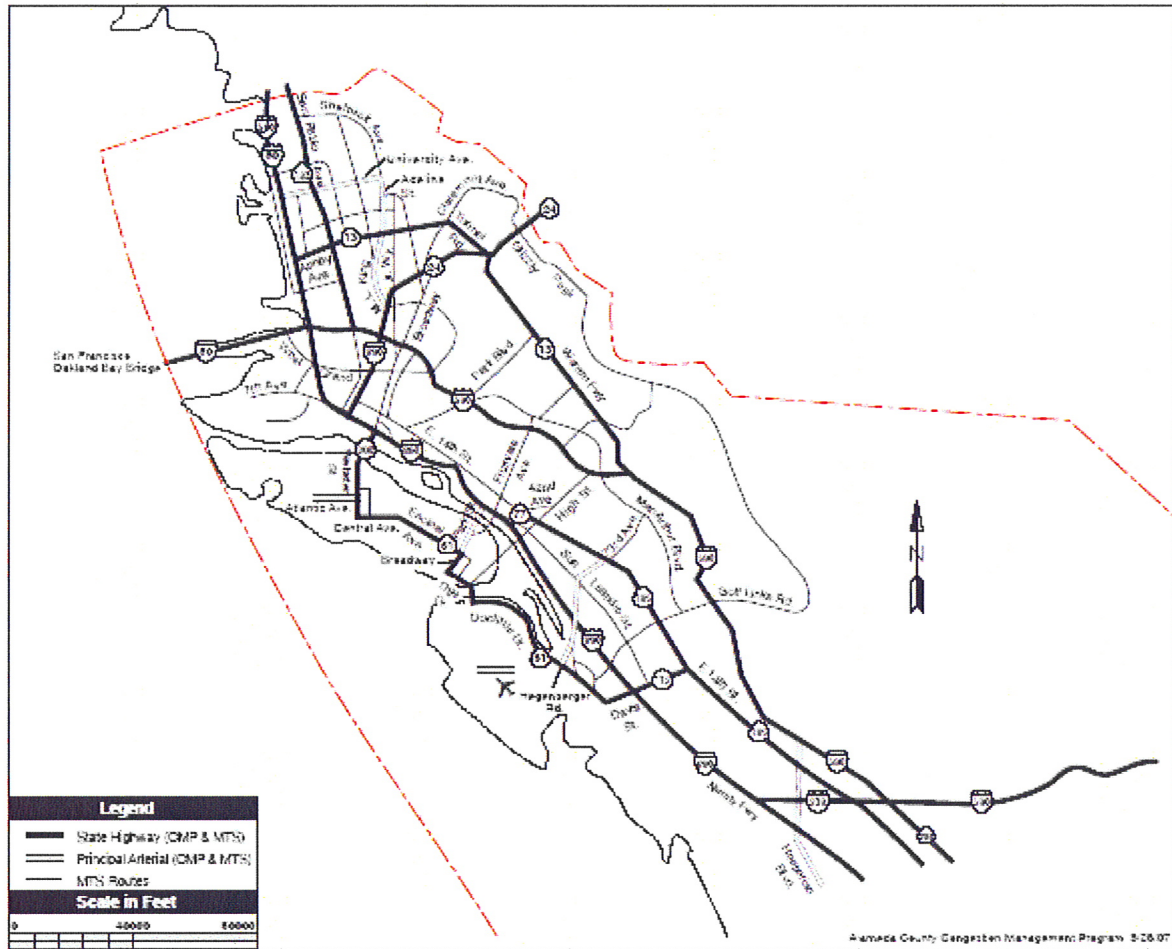


Figure 3—Designated System Map for Castro Valley, Hayward, San Leandro and San Lorenzo

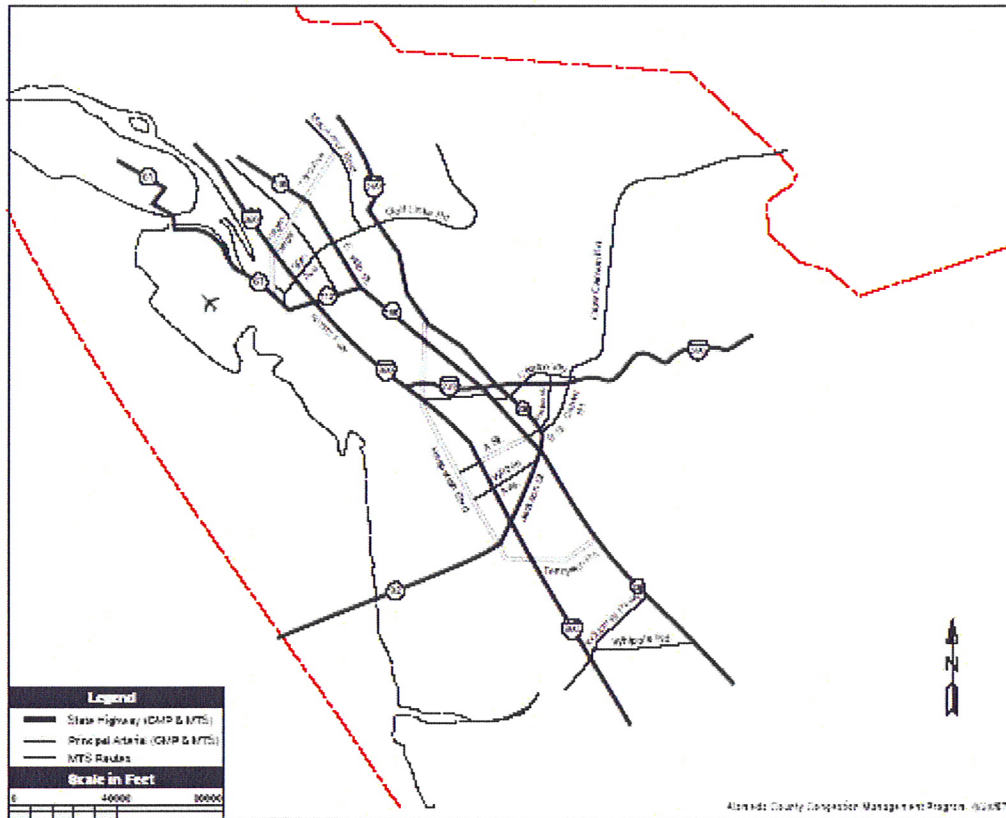


Figure 4—Designated System Map for Fremont, Newark and Union City

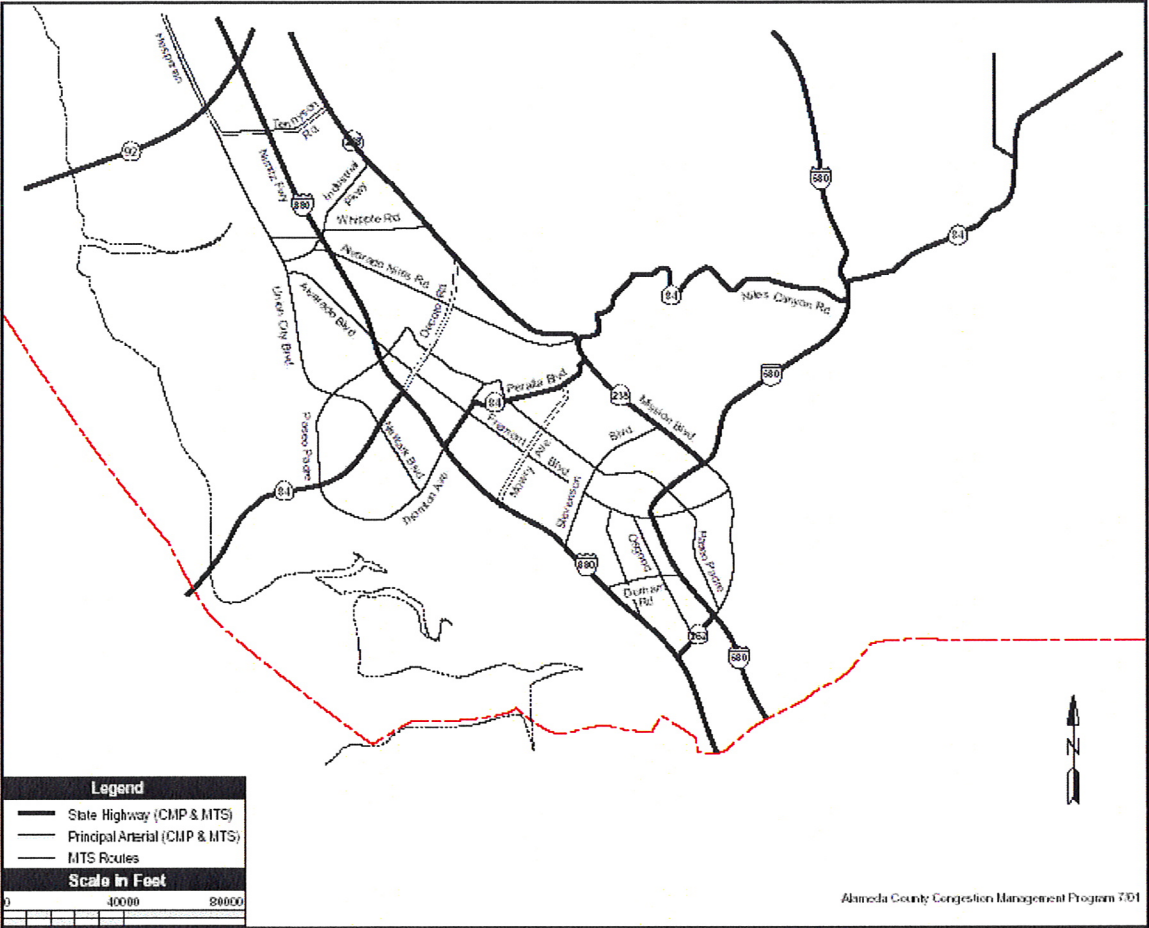


Figure 5 — Designated System Map for Dublin, Livermore and Pleasanton

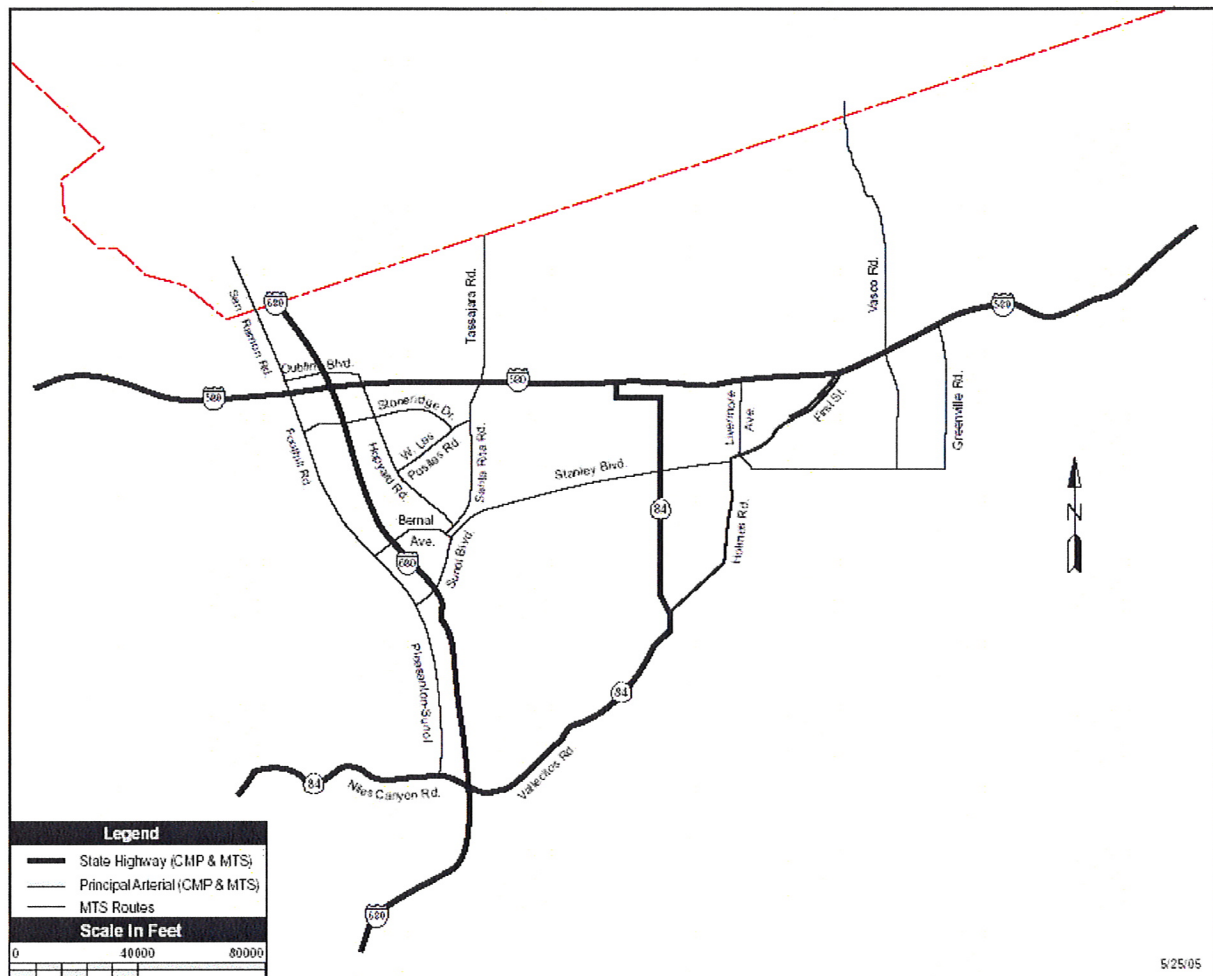
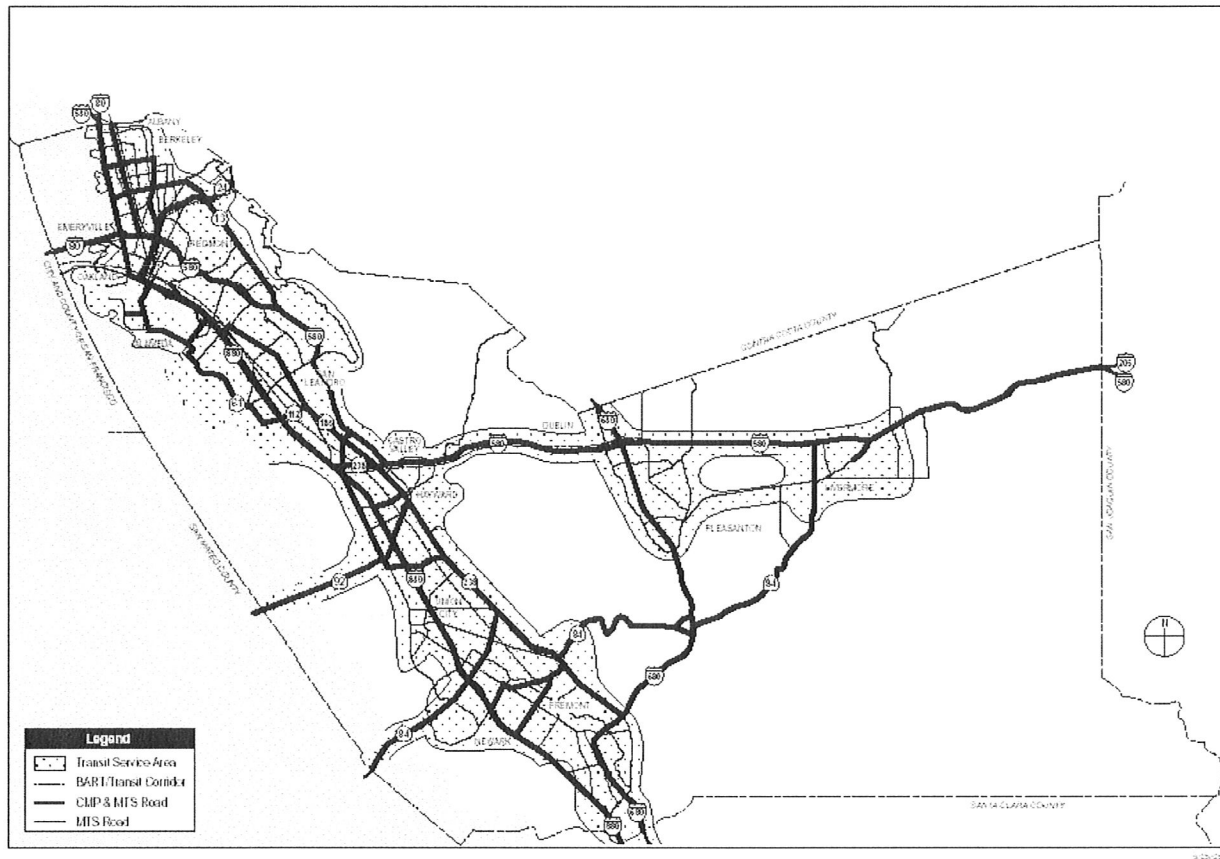


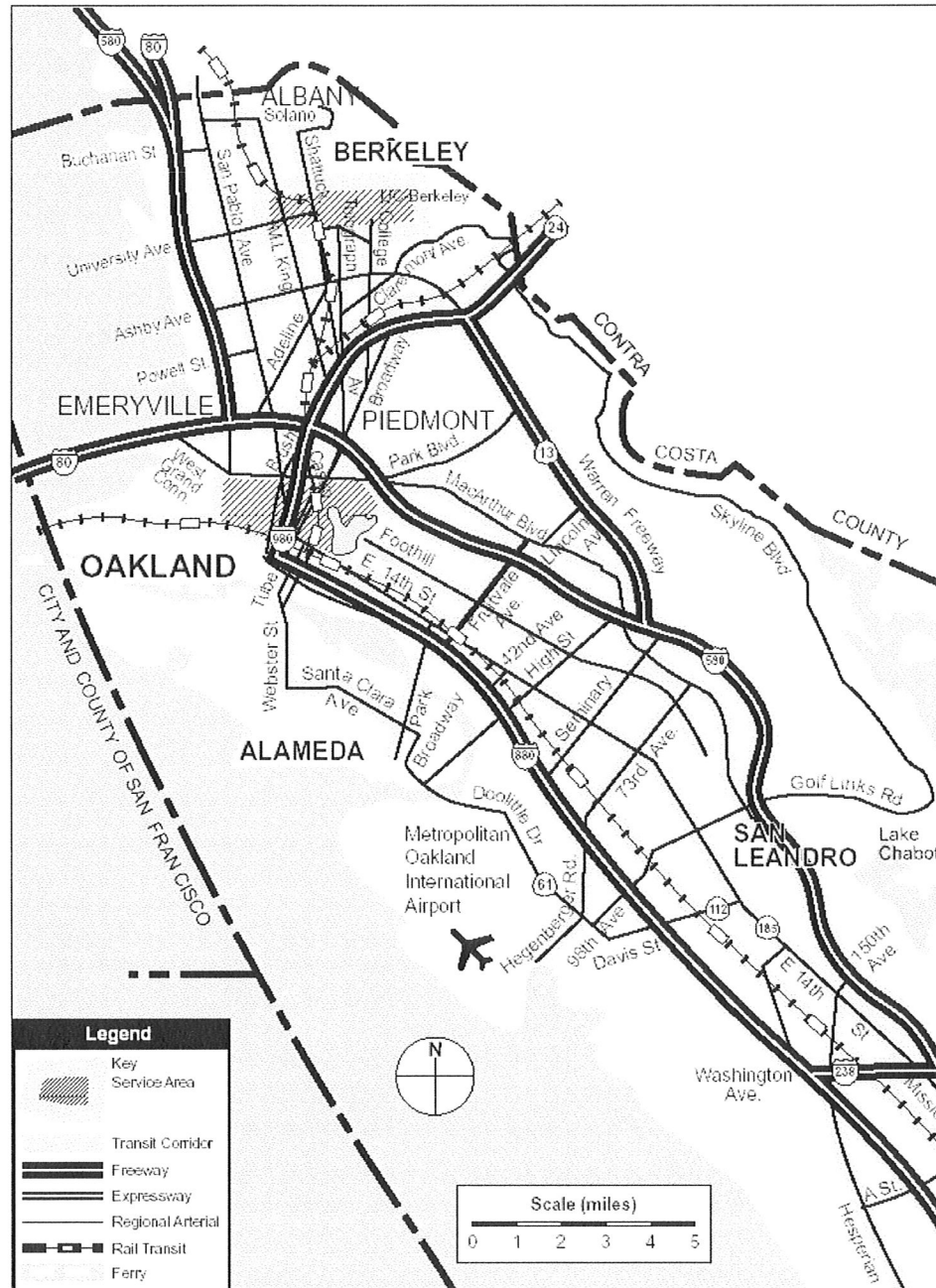
Figure 6 — Metropolitan Transportation System, Transit Corridors of Alameda County



The following are the operators that provide transit services in Alameda County:

1. AC Transit
2. Bay Area Rapid Transit (BART)
3. LAVTA
4. Union City Transit
5. ACE Commuter Rail
6. Capital Corridor
7. Alameda-Oakland Ferry Service
8. Harbor Bay Ferry Service

Figure 7 — Metropolitan Transportation System, Transit Corridors of Northern Alameda County Detail



CHAPTER THREE

Level of Service Standards

State law requires that level-of-service standards be established as part of the Congestion Management Program (CMP) process.¹⁷ Level of service must be measured by methods described in one of the following documents: Transportation Research Board Circular 212, the latest version of the Transportation Research Board's *Highway Capacity Manual* (HCM), or a uniform methodology adopted by the CMA that is consistent with the *HCM*. The legislation leaves the choice of level-of-service measurement methodology to the CMA.

LOS definitions generally describe traffic conditions in terms of speed and travel time, volume and capacity, freedom to maneuver, traffic interruptions, comfort and convenience and safety. LOS is represented by letter designations, ranging from A to F. LOS A representing the best operating conditions and LOS F the worst. See Appendix C for graphic representation of LOS.

The purpose of setting LOS standards for the CMP system is to provide a quantitative tool to analyze the effects of land use changes and to the system's performance (i.e., congestion). If the actual system performance falls below the standard (i.e., congestion worsens to LOS F), actions must be taken to improve LOS. Each year, the CMA is required to determine how well local governments meet CMP standards, including how well they meet the LOS standards.

Each year since 1991, the CMA has contracted with a consultant to perform the necessary LOS monitoring for the CMP-network. In 1998, the Board adopted a policy that the LOS monitoring will be done every two years instead of annually. Based on this, the next monitoring study will be done in spring 2010. This has proven to be the most cost-effective approach and may continue.

Alternatively, if Caltrans assumes responsibility for monitoring the freeway system as required or if local jurisdictions assume responsibility for monitoring local roads, evaluations will be structured to allow a self-certification process using Caltrans or local reports of LOS. The CMA will determine how well areas meet LOS standards based on these reports at the time of the annual conformance findings. The CMA will ensure that the adopted standards are monitored in a consistent manner by all local jurisdictions and/or Caltrans.

Local governments will need to consider the effects their land use decisions may have on future LOS on the regional transportation system. Therefore, cities and counties may have to develop funding for

¹⁷ California Government Code Section 65089(b)(1)(A)

projects and programs that will improve LOS on the CMP-network. If local land use decisions make the LOS on the state highway system worse, cities and the county may be responsible for the necessary improvements.

To provide a basis for more definitive strategies for maintaining LOS standards in subareas of Alameda County, the CMA has completed a program of corridor studies in the following high-priority corridors:

- I-80
- San Pablo Avenue
- I-880
- I-238
- I-580/Altamont Pass
- I-680
- I-580 Corridor BART to Livermore
- I-680 Value Pricing
- North I-880 Safety and Operations Study
- San Pablo and I-880 SMART Corridor programs
- Tri-Valley Triangle Study
- Central County Freeway Study

LOS STANDARDS

Goals and Objectives

LOS indicates traffic growth trends using vehicular volumes, capacity, and measurement of average speed and delay. The objectives are to develop a consistent approach which is easy to use, non-duplicative and compatible with local government data and travel-demand models. The approach is outlined in Table 4.

Table 4—Approach to LOS

ISSUE	APPROACH
Interregional Trips	As defined by statute, “interregional travel means any trip that originates outside” Alameda County. A ‘trip’ means a one-direction vehicle movement. The origin of any trip is the starting point of that trip. In accordance with MTC guidelines, trips with no trip end in Alameda County (through trips) were not subtracted for monitoring reports.
Level of Service	The LOS standard is E, except where F was the LOS when originally measured, in which case the standard shall be F. The method of analysis is documented in “ <i>Establishing the Existing Level of Service for the Alameda County CMP-Designated Roadway System</i> ”. The methods employed constitute a uniform methodology adopted by the CMA that is consistent with the <i>1985 Highway Capacity Manual (HCM)</i> and have been approved by MTC. Methods described in Chapter 8 (Two-Lane Highways) and Chapter 11 (Urban and Suburban Arterials) of the <i>HCM</i> were the basis for establishing the level of service on the CMP system. LOS is assessed based on the average speed observed along a roadway segment (link speeds), or total volumes approaching an intersection (link volumes). These methods are not designed to replace the more detailed procedures that local agencies are likely to use for non-CMP purposes (such as local impact studies). Such procedures typically focus on an intersection’s ability to handle individual turning movements.
Monitoring	The CMA will conduct LOS monitoring, although the cities, county or Caltrans may eventually assume responsibility for monitoring segments in their respective jurisdictions. State statute ¹⁸ requires Caltrans to monitor LOS on the freeway system, unless the CMA designates that responsibility to another entity. Monitoring will be conducted biennially, recognizing that other surveys could be done for development impact studies (e.g., intersection turning movement counts). The method of data collection is the floating car technique of recording travel times between checkpoints based on actual travel time during the peak period. Data from several runs in all non-high-occupancy vehicle (HOV) lanes are averaged for each roadway segment.

Facility Classifications

The HCM provides methods for determining LOS on several types of facilities. These facilities are grouped into “interrupted-flow” and “uninterrupted-flow” facilities. Interrupted-flow facilities include city streets and surface highways (like State Route 123/San Pablo Avenue) that are part of the state highway system. Freeways are uninterrupted-flow facilities. For purposes of LOS analysis, the CMP-network can be classified into three functional types of facilities: freeways; two-lane roadways; and urban/suburban arterials.

¹⁸ California Government Code Section 65089(b)(1)(A), Amended 1995.

Freeways

Freeways are uninterrupted-flow facilities, since traffic never stops (except during the most congested periods or when incidents occur). For the 1991 CMP, the CMA, in coordination with local jurisdictions, defined appropriate segments and performed the necessary floating car runs on the freeways to obtain travel speed data. This allowed the establishment of a baseline LOS for the system, including identification of segments operating at LOS F. It is anticipated that Caltrans may eventually monitor freeway system, as required by statute (Katz, Statutes of 1995).

Two-Lane Roadways

Two-lane roadways are uninterrupted-flow facilities. The criteria for including principal arterials in the CMP-network specify a minimum of four lanes; therefore, two-lane roadways are not included as principal arterials. However, two-lane state highways are included, since all state highways must be in the system. These two-lane roads constitute a fairly small portion of the CMP-network mileage. , but a method for level-of-service analysis is suggested here. For two-lane roads without interruptions (signals or stop signs), Chapter 8 of the HCM is used, based on average travel speed.

Urban and Suburban Arterials

Urban and suburban arterials are multi-lane streets that have traffic signals spaced no more than two miles apart on average. Because the CMP legislation emphasizes systems-level planning, Chapter 11 of the HCM is used to estimate arterial LOS. Advantages include the need for relatively little input data, simple applied calculations and the results of explicitly determined LOS (A, B, C, etc.).

LOS Methodology

Urban and suburban arterials are characterized by platoon flows. Operational quality is controlled primarily by the efficiency of signal coordination and is affected by how individual signalized intersections operate along the arterial. LOS is primarily a function of travel speed along segments, and is calculated from field data. Beyond measuring existing LOS conditions (using actual counts or travel speed measurements), the CMA's approach is to be forward-looking. Using the Alameda countywide travel model, future LOS conditions on the CMP-network will be estimated by analyzing information about local land use decisions and taking into account local investments in transportation, which are proposed in the Capital Improvements Program of the CMP. Using the countywide model, it is possible to forecast average travel times and speeds for future traffic operations. The results would need to be checked for reasonableness under existing conditions before being used as a forecasting tool.

TRAFFIC MONITORING PROGRAM

The CMA currently conducts LOS monitoring on CMP system roadways. If the cities, county or Caltrans assume responsibility, monitoring could be accomplished through a self-certification process involving the local jurisdictions and/or Caltrans and the CMA.

Self-Certification Process

By June 15 of each year, a set of travel time runs are to be submitted to the CMA for the CMP-network. A city or the county, if it assumes responsibility, would submit the information, except for the freeways, within its jurisdictional limits. If Caltrans assumes responsibility for the freeways, it would similarly submit summary data to the CMA by June 15. Local jurisdictions or Caltrans will also be responsible for calculating LOS according to Table 5, which is based on Chapter 11 of the HCM. Local agencies or Caltrans will keep raw field data available for the CMA to examine for at least three years. Travel time runs will be completed by mid-May each year. ACTAC will provide technical guidance and assistance in reviewing methodology and interpreting LOS monitoring results.

Data Requirements

In addition to the basic geometric, signal timing, and other such “physical” information, the traffic monitoring program requires information about average travel speed, which is the basis for level-of-service measurement on all facility types (i.e., freeways, two-lane highways (uninterrupted) and urban/suburban arterials). For a given roadway segment, monitoring must be performed and reported separately for each travel direction. Travel speed studies normally are conducted using “floating” cars that drive at the posted speed, or if constrained by traffic conditions, at the average speed of traffic. Starting 2008, the Global Positioning System (GPS) is used to record travel data in “floating car” method.

Until 2004, LOS monitoring was conducted for all the CMP segments during the p.m. peak hours (4:00 p.m. to 6:00 p.m.) and for selected freeway CMP segments during the a.m. peak hours (7:00 a.m. to 9:00 a.m.). The CMA Board recommended that all CMP roadway segments be monitored during both peak periods starting 2006 LOS monitoring period. The a.m. peak monitoring will be for informational purposes only.

Acceptability of Data

A suggested approach to ensure acceptable monitoring is described in *Establishing the Existing Level of Service for the Alameda County CMP-designated Roadway System* (CMA, 1991). This document is based on the Institute of Transportation Engineer’s *Manual of Traffic Engineering Studies* (Chapter 7, Test Car Method). A test car is driven six times in each direction on all CMP-network. This frequency may be adjusted later for roadway segments found to consistently operate at LOS A or B. More than six test car runs are performed on roadway segments operating at LOS E or F because a greater range or fluctuation in data typically occurs. Test car runs will be repeated biennially.

The following guidelines will be used to determine acceptability of data for use in the CMP:

- Test car runs must be made on a Tuesday, Wednesday and/or Thursday, because these days are most indicative of average weekday conditions.
- Test car runs on a particular segment must span a range of days and time of day. This means that test car runs should not be bunched on the same day of the week or taken on separate days at the same time.

LEVEL OF SERVICE STANDARDS

- Runs near holidays, when school is not in session or when roadway construction is under way, must be avoided.
- Consistent monitoring periods must be observed for each roadway segment. For example, a comparison between April 2002 and April 2003, is likely to be more valid than a comparison between January 2002 and August 2003.
- If special generators are located within a few miles of the monitoring location, it must be determined whether unusual or unwanted activity levels are occurring at the special generator. A call to a shopping center management company, for example, could be made to ascertain that the test day(s) was reasonably close to average, and that no retailers were holding major sales.

Table 5—Relationship between Average Travel Speed and LOS

ARTERIALS

Arterial Class	I	II	III
Range of Free Flow Speeds (mph)	35 to 45	30 to 35	25 to 35
Typical Free Flow Speed (mph)	40	33	27
Level of Service	Average Travel Speed (mph)		
A	≥ 35	≥ 30	≥ 25
B	≥ 28	≥ 24	≥ 19
C	≥ 22	≥ 18	≥ 13
D	≥ 17	≥ 14	≥ 9
E	≥ 13	≥ 10	≥ 7
F	< 13	< 10	< 7

FREEWAYS

LOS	Average Travel Speed (mph)	Volume-To-Capacity Ratio	Maximum Traffic Volume (vehicles / hour / lane)
A	≥ 60	0.35	700
B	≥ 55	0.58	1,000
C	≥ 49	0.75	1,500
D	≥ 41	0.90	1,800
E	≥ 30	1.00	2,000
F	< 30	Variable	-

Source: *Highway Capacity Manual*, Transportation Research Board, 1985.

Range for LOS F for Freeway Sections:¹⁹

- F30—Average Travel Speed < 30 mph
- F20—Average Travel Speed < 20 mph
- F10—Average Travel Speed < 10 mph

¹⁹ Approved by Plans and Programs Committee of the ACCMA on June 14, 2004 to show degrees of LOS F on congested roadways.

Definition of Roadway Segments

For surface highways, ACTAC determined route segments for travel time analysis, with input from appropriate departments (traffic engineer, planning department, etc.) at the local jurisdiction. This determination used the following guidelines:

- Segments should be at least one mile and not more than five miles in length.
- Logical segment break-points include: jurisdictional boundaries; points where the basic number of travel lanes change; locations where land use changes occur (e.g., commercial area versus residential), points where the posted speed limit changes or where the number of adjacent driveways is significantly different.

Since the adoption of the CMP roadway segments in 1991, the intensity and location of congestion throughout the county has changed. Therefore, in 2007, ACTAC reviewed the CMP roadway segment lengths and the criteria for designating the CMP roadway segments to develop new segments that better reflect existing land use and travel patterns. It was found that from a field and operating perspective, the CMP roadway segmentation criteria were still appropriate and therefore it was recommended that no changes be made. However, many long segments were found to be showing better levels of service by averaging speed over the length of the segments. Splitting these segments using the approved criteria revealed congestion hot spots. To more accurately identify congested segments, the longer segments were split into shorter segments. Because this original check points were retained for this exercise, all new segments nest within the old segments. This is important so that trends can be evaluated over time. The complete list of CMP roadway segments including the new segments are shown in Appendix H. Many new segments are located on I-580 in the Tri-valley area. There are only four arterials that are further segmented. For the 2009 CMP Update, SR 84 in East County was segmented into shorter segments.

To date the CMA has performed all data collection (floating car runs) on the CMP-designated system of arterials and freeways. However, the CMA continues to work to ensure that the California Department of Transportation, Caltrans, will eventually assume responsibility for collecting all data necessary for determining levels of service on freeways. According to statute (Katz, Statutes of 1995), Caltrans “is responsible for data collection and analysis on state highways, unless the {CMA} designates that responsibility to another entity. The {CMA} may also assign data collection and analysis responsibilities to other owners and operators of facilities or services if the responsibilities are specified in its adopted program”.

Identification of LOS F Roadway Segments

Between July and October, 1991, the CMA completed travel time studies to establish existing LOS on all segments of the CMP-network during the p.m. peak period. Travel time studies were conducted during the p.m. peak period on Tuesdays, Wednesdays, and Thursdays. Information gathered consisted of travel time runs on all CMP routes. A range of four to 10 travel time runs in each direction were done to estimate average travel speeds, in accordance with CMP requirements and Institute of Transportation Engineers recommendations, as specified in their *Manual of Traffic Engineering Studies*.

Travel time checkpoints for principal arterials were generally chosen at signalized intersections; for freeways, interchange ramp junctions were used. Further detail about segment LOS monitoring methodology and results are available by contacting the CMA.

During the 1992 monitoring cycle it was determined that freeway-to-freeway connectors had not been monitored as part of the 1991 baseline LOS determination. Monitoring of these segments was performed, together with the rest of the network, between August and September, 1992. Five freeway connector segments were operating at LOS F, and they were grandfathered as permitted by the statutes. The LOS freeway-to-freeway connections are shown in Table 6.

Tables 6 and 7 and Figure 8 identify the system segments (on freeways and principal arterials) found to operate at LOS F in 1991. According to the study results, a total of 15 freeway segments (excluding freeway to freeway connectors) and 15 arterial segments were operating at LOS F during the p.m. peak period in 1991. These segments, which operated at LOS F during 1991 (the first year of the CMP), are grandfathered from CMP requirements for preparing a deficiency plan.

Grandfathered Segments

The 30 segments (15 freeway and 15 arterial) grandfathered by statute in 1991 are not exempt from analysis and mitigation for purpose of satisfying the Land Use Analysis Program (Chapter 6), the California Environmental Quality Act (CEQA) and the federal National Environmental Protection Act (NEPA). The CMP focuses on existing congestion, therefore strategies and/or improvements to address grandfathered segments should be considered in corridor studies, investments in the *Countywide Transportation Plan* and the CMP Capital Improvement Program (CIP).

Infill Opportunity Zones

SB 1636 (Figueroa) signed by the Governor in 2002 established “infill opportunity zones” to encourage transit supportive development. The statute exempts infill opportunity zones from the requirements to maintain the LOS E. The city and/or county shall either include the streets and highways under an alternative areawide LOS or a multi-modal composite or personal LOS standard or approve a list of flexible LOS mitigation options.

Specific land uses are required in the Infill Opportunity Zone (see government code section 65088.1(g)). Infill opportunity zones must be designated by a city or the county and contain the following characteristics: zoned for new compact residential or mixed use development within 1/3 mile of an existing or future rail transit station, ferry terminal served by either a bus or rail transit service, an intersection of at least 2-major bus routes or within 300 feet of a bus rapid transit corridor in counties with population over 400,000.

The process to adopt the guidelines and strategies for implementing infill opportunity zones in Alameda County including clarifying agency roles and policy objectives were reviewed in 2007. As a result, it was determined that if a jurisdiction wishes to adopt an infill opportunity zone, they are requested to notify the

CMA first and work towards a mutually agreeable set of mitigation measures or alternative LOS standards.

Frequency of Monitoring

Since a fair number of roadway segments operate at LOS A, it would be a poor use of limited resources to recalculate these LOS every year. It is unlikely that a system segment will fall from LOS A to below E in just one year. To reduce calculation effort, traffic monitoring to comply with the CMP may be done only for segments operating at LOS C or worse, at the option of the local jurisdiction. The focus should be on analyzing problem areas. Analysis of transportation impacts of proposed local land use decisions will highlight segments, which may need to be monitored more closely. Thus, if a link is expected to be approaching LOS E or F, it will be monitored and its LOS analyzed more frequently than segments at better service levels.

COMPARISON WITH PREVIOUS RESULTS

The results of several years of LOS monitoring, as presented in Table 8, show that overall traffic conditions for long-distance trips on the CMP freeway network have generally remained stable or improved. Though not particularly strong, an overall trend or change can be interpreted from comparisons with the 1991 LOS data. There is some improvement in average traffic conditions (i.e., higher speeds) on these longer distance freeway trips over 1991 conditions. However, there are still congested points found along most of the routes. System capacity and operational enhancements account for improvements on some facilities.

COMPLIANCE AND CONFORMANCE

Government Code Section 65089.3(a) requires the CMA to biennially monitor conformance with the adopted CMP. Among the requirements, the CMA must find consistency with the LOS standards. If a roadway segment is not conforming to the LOS standards based on the biennial monitoring, the affected local jurisdiction will be notified, and may elect to remedy the LOS problem or prepare a deficiency plan (see Chapter 8). If after 90 days the local jurisdiction is still in non-conformance, the CMA is required to provide notice to the CTC and the State Controller. The notice includes the reasons for the finding and evidence that the CMA correctly followed procedures for making the determination.

The State Controller would then withhold the non-conforming jurisdiction's increment of subventions from the fuel tax made available by Proposition 111, and the jurisdiction will not be eligible to receive funding for projects through the federal STP and CMAQ Program. If within the 12-month period following the receipt of a notice of non-conformance, the CMA determines that the city or county is in conformance, the withheld Proposition 111 funds will be released to the CMA for projects of regional significance included in the CMP or a deficiency plan.

LOCAL GOVERNMENT RESPONSIBILITIES

At present, the CMA is contracting with a consultant to monitor all segments of the CMP roadway system. If a local government or Caltrans assumes responsibility for monitoring roadways included in the portion of the CMP system under its jurisdiction, it must biennially monitor the LOS on the designated system and report to the CMA by June 15 of that year relative to conformance with the adopted standards.

Table 6—LOS F Freeways for Alameda County CMP-Designated Roadway System

These segments, which operated at LOS F in 1991, the first year of the CMP, are grandfathered from CMP requirements for preparing a deficiency plan. However, being grandfathered does not exempt these roadways from analysis and mitigation for purposes of satisfying the CEQA or NEPA or as part of the Land Use Analysis Program.

	Roadway	Dir.	Limits	Jurisdiction	Average Speed (mph)
1	I-80	WB	From: University To: I-80/580 Split	Berkeley/Emeryville	16.6
2	I-80	WB	From: I-80/580 Split To: Bay Brg Toll Plaza	Oakland	29.7
3	I-80	EB	From: I-580/80 Split To: University	Emeryville/Berkeley	25.8
4	I-80	EB	From: University To: Central	Berkeley/Albany	25.8
5	SR-24	EB	From: I-580 To: Fish Ranch Road	Oakland	28.5
6	I-580	SB	From: I-80/580 To: I-980/Hwy 24	Oakland	25.6
7	I-980	EB	From: I-880 To: SR-24/I-580	Oakland	28.5
8	I-238	EB	From: I-880 To: I-580	County/San Leandro	29.8
9	I-880	SB	From: Hegenberger To: Washington	San Leandro/Oakland	29.2
10	I-880	SB	From: Washington To: A Street	County/Hayward	24.3
11	I-880	NB	From: Tennyson To: SR-92 (Jackson)	Hayward	18.2
12	I-880	NB	From: SR-92 To: Lewelling	Hayward	23.2

LEVEL OF SERVICE STANDARDS

	Roadway	Dir.	Limits	Jurisdiction	Average Speed (mph)
13	I-880	NB	From: Dixon Landing To: SR-262/Mission	Fremont	29.3
14	SR-92	WB	From: Clawiter To: Toll Gate	Hayward/County	27.1
15	SR-92	EB	From: Toll Gate To: I-880	Hayward/County	27.5

Note: Data is based on surveys taken during the afternoon peak period in September/October, 1992.

FREEWAY-TO -FREEWAY CONNECTORS

Ramp Connection	Jurisdiction	Length (miles)	Average Speed	Free Flow Speed
I-80 SB to I-580 EB*	Oakland	0.30	18.7	45.0
I-580 WB to I-80 NB*	Oakland	0.21	16.0	45.0
I-680 SB to I-580 EB	Pleasanton	0.67	16.3	35.0
SR-13 NB to SR-24 EB	Oakland	0.35	14.4	45.0
I-580 WB; SR-24 WB to I-80 NB	Oakland	0.69	22.1	45.0

Note: Data is based on surveys taken during the afternoon peak period in September/October, 1992.

* LOS condition was first reported during the 1991 surveys.

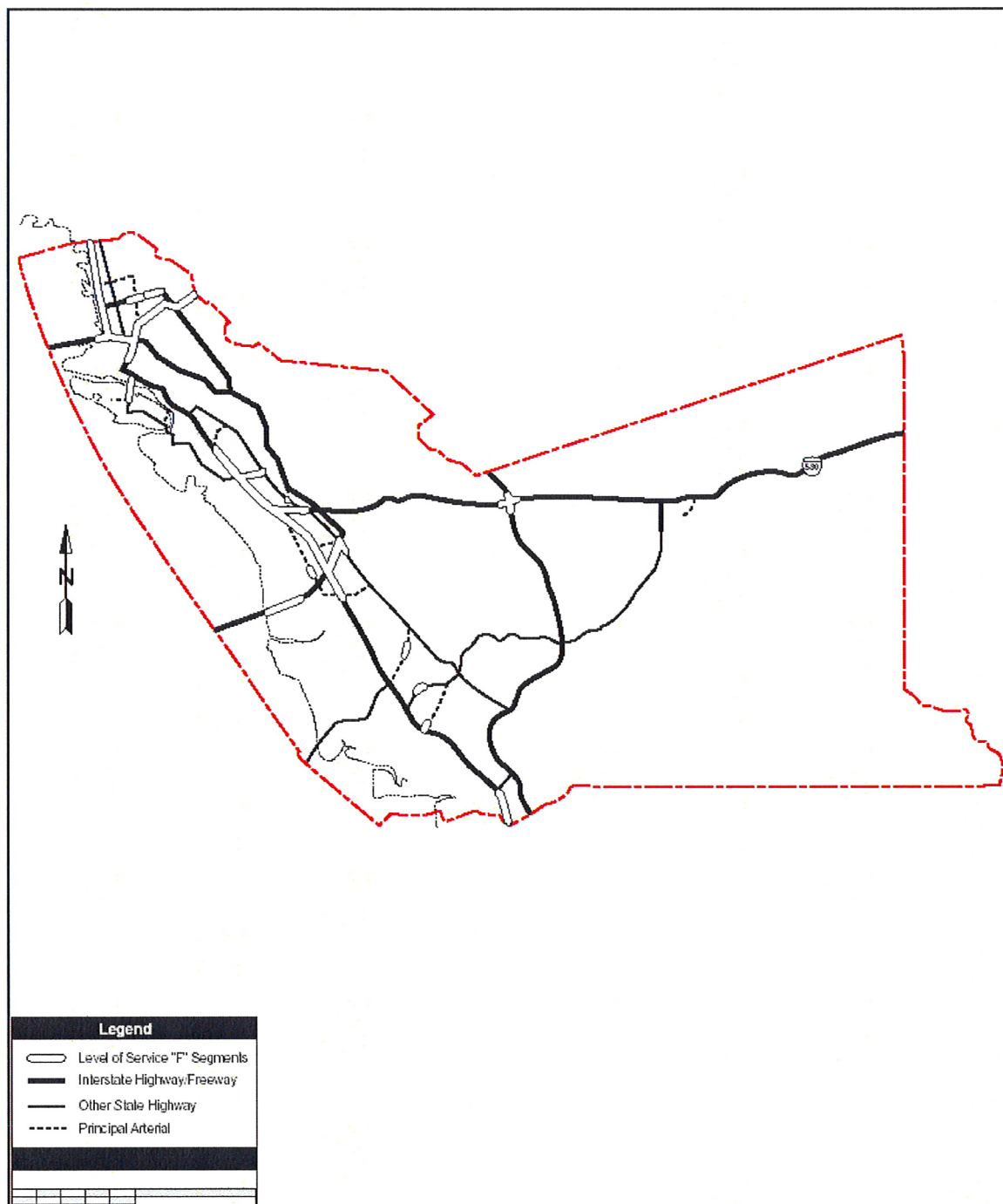
**Table 7—LOS F Arterial Segments
Alameda County CMP-Designated Roadway System**

	ROADWAY	DIR	LIMITS	JURIS.	ARTERIAL CLASS	AVG SPEED (mph)
1	SR-13 (Ashby Ave.)	WB	From: Telegraph To: Shattuck	Berkeley	III	8.7
2	SR-13 (Ashby Ave.)	WB	From: Shattuck To: MLK, Jr. Way	Berkeley	III	9.3
3	SR-13 (Ashby Ave.)	EB	From: College To: Domingo	Berkeley	III	6.8
4	SR-123 (San Pablo Ave.)	SB	From: Park Avenue To: 35th Street	Emeryville/ Oakland	II	9.4
5	SR-260	SB	From: 7th/Webster To: Atlantic	Oakland/ Alameda	I	12.3
6	SR-238 (Mission Blvd.)	NB	From: Sycamore To: Jackson	Hayward	II	8.8
7	SR-92 (Jackson St.)	EB	From: I-880 To: Winton	Hayward	II	8.6
8	SR-92 (Jackson St.)	EB	From: Winton Ave. To: Mission	Hayward	II	4.5
9	Hesperian Blvd.	NB	From: La Playa To: Winton	Hayward	I	11.1
10	Hesperian Blvd.	SB	From: 14th St. To: Fairmont	San Leandro	II	9.9
11	Hesperian Blvd.	SB	From: Spring lake To: Lewelling	Unincorp.	II	9.6
12	SR-112 (Davis St.)	WB	From: I-880 To: San Leandro Blvd.	San Leandro	II	5.2
13	Decoto Road	WB	From: Union Square To: Alvarado-Niles	Union City	II	8.6
14	SR-84 (Fremont Blvd.)	WB	From: Peralta Blvd To: Thornton Ave.	Fremont	II	7.2
15	Mowry Avenue	EB	From: I-880 To: Farwell Dr.	Fremont	II	9.6

Note: Based on surveys during the afternoon peak period (4 to 6 p.m.) in July-August and October, 1991.

Table 8—LOS Trends on the CMP-network (afternoon peak period)

ROAD	DIR	LIMITS	DIST (mi.)	MILES PER HOUR										
				'91 Aug	'91 Oct	'92	'94	'96	'98	'00	'02	'04	'06	'08
I-80	EB	Bay Bridge Toll Plaza to Contra Costa line	6		23	20	22	21	20	27	19	32	23	21
I-80	WB	Contra Costa line to Bay Bridge Toll Plaza	6	26	25	24	23	25	28	18	22	28	28	36
I-580	EB	I-238 to I-205	31	-	56	55	55	55	na	41	31	34	36	35
I-580	WB	I-205 to I-238	31	-	57	56	57	61	na	55	55	60	58	61
I-580	EB	I-80 to I-238	16	-	53	52	44	53	60	63	55	43	34	47
I-580	WB	I-238 to I-80	16	-	58	55	51	52	61	63	60	57	55	63
I-680	NB	Scott Creek Rd. to Alcosta Blvd.	21	-	58	57	57	52	51	58	51	42	53	43
I-680	SB	Alcosta Blvd. to Scott Creek Rd.	21	-	59	58	55	61	67	63	62	66	58	63
I-880	NB	Dixon Landing Rd. to I-980	30	42	45	44	43	46	38	48	38	49	45	43
I-880	SB	I-980 to Dixon Landing Rd.	30	47	43	40	38	46	50	49	41	37	37	48
SR-13	NB	Mountain Blvd to Hiller Dr.	6	51	54	50	49	48	53	51	50	35	39	51
SR-13	SB	Hiller Dr. to Mountain Blvd	6	57	56	59	53	47	59	59	55	54	57	49
SR-24	EB	I-580 to Fish Ranch Rd.	5	29	30	29	30	24	39	33	21	40	25	24
SR-24	WB	Fish Ranch Rd. to I-580	5	53	54	58	54	50	60	57	61	59	59	58

Figure 8—LOS F Roadways

Note: These segments, which operated at LOS F in 1991, the first year of the CMP, are grandfathered from CMP requirements for preparing a deficiency plan. However, being grandfathered does not exempt these roadways from analysis and mitigation for purposes of satisfying the CEQA or NEPA or as part of the Land Use Analysis Program.

CHAPTER FOUR

Performance Element

CMAAs must evaluate how well their transportation systems are doing in meeting their CMP objectives of reducing congestion and improving air quality.²⁰ Specifically, the CMP must contain performance measures that evaluate how highways and roads function, as well as the frequency, routing and coordination of transit services. The performance measures should support mobility, air quality, land use and economic objectives and be used in various facets of the CMP.

Combined with LOS standards, the Performance Element provides a basis for evaluating whether the transportation system is achieving the broad mobility goals in the CMP. These include developing the Capital Improvement Program, analyzing land use impacts and preparing deficiency plans to address problems. The legislation intends for the Performance Element to include new performance measures, in addition to roadway LOS and transit routing, frequency and service coordination. However, only the roadway LOS standards will be used to trigger the need for a deficiency plan.

Integrating these CMP elements may occur in the future, after gaining some experience in implementing the Performance Element. For the 2009 CMP, implementing the Performance Element will help the CMA prioritize projects for funding and develop management and operations strategies.

The CMA Board adopted the following guiding principles to use in developing the Performance Element:

- Keep it simple and manageable;
- Be cost-effective, relying on available data and established monitoring processes;
- Use the CMA's long-range transportation goals and MTC's multimodal programming criteria as a philosophical framework;
- Use measures that can be presented in easy-to-understand and consumer-oriented terms;
- Consider an array of measures since one measure will not serve all needs; and
- Satisfy state AB 1963 and federal ISTEA and Transportation Equity Act for the 21st Century (TEA-21) requirements.

²⁰ California Government Code Section 65089(b)(2)

RELATIONSHIP TO THE COUNTYWIDE TRANSPORTATION PLAN

The philosophical framework envisioned for the Performance Element is to relate performance measures to the (1) goals and management strategies in the 2008 *Countywide Transportation Plan (amended in 2009)* and (2) policies set forth in the CMP. Figure 9 shows how the Performance Element relates to other responsibilities of the CMA. Table 9 shows the relationship between performance measures and the long-range goals the CMA Board adopted. Measures of the transportation system's performance will provide feedback on the effectiveness of management strategies and investment decisions.

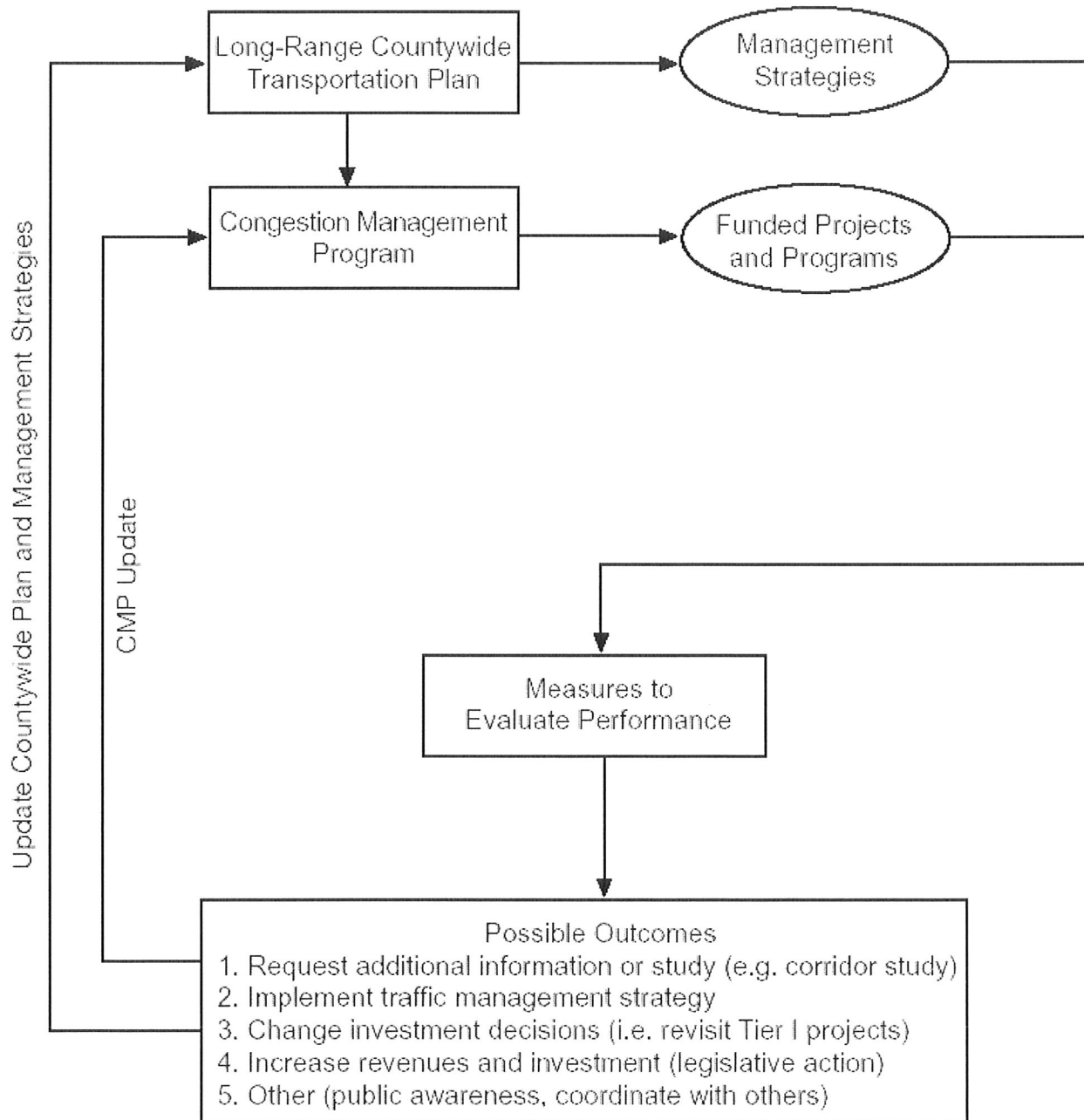
PERFORMANCE MEASURES

Performance measures to be used are listed in Table 9. The measures encompass all modes of transportation. Peak and off-peak travel periods are considered for typical weekdays. Measurements of current conditions rely primarily on available data and established data collection processes.

The recently updated countywide travel model can forecast the following additional performance measures:

- Person trips by mode
- Vehicle volume by roadway segment
- Vehicle miles traveled by facility type
- Modal share
- Volume-to-capacity (v/c) ratios by facility type
- Vehicle hours of travel by facility type
- Lane miles by v/c ratio
- Person miles traveled by mode
- Passenger boarding by operator or line
- Travel time by mode
- Travel speed by mode
- Vehicle hours of delay by facility type
- Duration of congestion by facility
- Time spent in congestion
- Transit accessibility

Figure 9—How Performance Measures are used in the CMP



Acceptability of Data

A suggested approach to ensure that data collection methods are acceptable to the CMA is described in “Establishing the Existing Level of Service for the Alameda County CMP-designated Roadway System”.²¹ This applies to speed and travel time data. An ongoing process will be necessary to review definitions and methods to ensure that the information is collected in a consistent manner prior to use in trend analyses.

System Definition

While the statutes clearly require designation of a CMP-network for purposes of LOS monitoring, they provide no guidance for selecting a system for the Performance Element. The CMA will use the Metropolitan Transportation System for the Performance Element. The CMA also recognizes the MTS²² in the Land use Analysis Program as the focus of transportation analyses.

Description of Performance Measures

Average Highway Speeds

As currently measured by the CMA, this is the average travel speed of vehicles over specified segments measured in each lane during peak periods. This measurement is made a sufficient number of times to produce statistically significant results.

Travel Time

Calculated for up to 10 pairs of origins and destinations (O-D) using floating car data to determine average roadway travel time and transit time between these O-D pairs. These O-D pairs will reflect major corridors in Alameda County.

Duration of Traffic Congestion

As defined by Caltrans, this is the period of time during either the a.m. or p.m. peak that a segment of roadway is congested (average speed is less than 35 m.p.h. for 15 minutes or more). Data are collected by Caltrans, recently by MTC, from floating car runs conducted in April/May and September/October each year and reported annually. The CMA may be able to collect similar data on the remainder of the CMP-network by conducting floating car runs earlier or later, where necessary, to observe the beginning and ending of the congested period.

²¹ Abrams Associates, November 26, 1991

²² In 2005, MTC updated the MTS to include Rural Major Collector streets and higher based on the Federal Functional Classification System (FFCS). The updated MTS is used by MTC for the purposes of funding and programming as well as in estimating roadway maintenance needs. The updated MTS was reviewed by ACTAC during the 2009 CMP Update to determine its usefulness and applicability to the Land Use Analysis Program. Based on ACTAC's input and discussions with MTC, it was determined that the updated MTS was not appropriate for the Land Use Analysis Program because it was too detailed for planning purposes and the previous version of the MTS would continue to be used.

Roadway Maintenance

As defined by MTC, this is based on the roadway Pavement Condition Index (PCI) used in MTC's Pavement Management System. The PCI is a measure of surface deterioration on streets and roads.

Roadway Accidents

The number of accidents per one million miles of vehicle travel is determined. Caltrans collects the data as a part of the State Switzer/TASIS System.

Percent of Countywide Bike Plan Completed

Measured in terms of the number of miles and the percentage completed of the countywide bicycle plan. Focus will be on the progress of the high priority projects included in the bicycle plan.

Transit Routing

This measure refers to both the pattern of the transit route network (e.g., radial, grid, etc.) and the service area covered (e.g., percent of total population served within one-quarter mile of a station/bus stop or percent of total county served, etc.). Measurement of routing performance may be applied at the corridor or screenline level, to give operators flexibility in locating service routes.

Frequency of Transit Service

This refers to the headway, or the time between transit vehicles (e.g., one bus arrival every 15 minutes). Service should be frequent enough to encourage ridership, but must also consider the amount of transit ridership the corridor (or transit line) is likely to generate. It also considers the capacity of the existing transit service in that corridor.

Transit Service Coordination

This measure refers to coordination of transit service provided by different operators (e.g., timed transfers at transit centers, joint fare cards, etc.). Performance should be aimed at minimizing inconvenience to both the infrequent and frequent user. Information provided by transit agencies should address the questions: Is there coordination and how convenient is it?

Transit Ridership

The number of average daily passengers boarding or de-boarding transit vehicles in Alameda County.

Transit Vehicle Maintenance

AC Transit and the Livermore-Amador Valley Transit Authority (LAVTA) refer to "Miles between Mechanical Road Calls" as a performance measure, defined as the removal of a bus from revenue service due to mechanical failure. BART and Altamont Commuter Express (ACE) have a related term known as "Mean Time between Service Delays." Delays can be caused by personnel or by mechanical failures.

Transit Availability

Transit availability is measured by the frequency of transit service during morning peak periods within one-half mile of rail stations or bus and ferry stops and terminals. Population density at the same stations are also measured to track availability of transit to Alameda County residents. The transit frequency portion of this measure is measured annually based on input from transit operators.

Transit Capital Needs and Shortfall

Transit capital needs and shortfall is measured every four years, coinciding with the Regional Transportation Plan. This is tracked for High Priority (Score 16) transit projects for Alameda County transit operators.

Description of Monitoring of Progress

Community Based Transportation Plans

In addition to performance measures, projects identified in Community Based Transportation Plans (CBTPs) and funded through the Lifeline Transportation Program will be monitored annually.

Monitoring will show the status and progress of projects, which are meeting transportation needs in low income communities, as identified in CBTPs. This will be included in a table in the Performance Report.

Table 9—Performance Measures

PERFOR- MANCE MEASURE	RTP GOAL	CWTP GOAL	OBJ. IN STATUTE	REQ'D DATA	HOW RESULTS CAN BE USED	CAUTIONARY NOTES CONCERNING DATA USE
Average Highway Speeds	Reliability; Efficient Freight Travel; Security & Emergency Management	Improve Mobility Air Quality	Mobility Air Quality	Current Requirement Average speeds on CMP network	LOS determinations. Trigger Deficiency Plans. Evaluate direct effectiveness of projects in relieving congestion.	Adequate for determining CMP conformance. Caution in use as a measure of mobility.
Travel Time Transit, Highways, HOV Lanes	Reliability; Efficient Freight Travel; Security & Emergency Management	Improve Mobility Increase Transit Use Improve Air Quality	Mobility Air Quality Land Use	Average travel time between selected origin- destination pairs. Obtain from biennial LOS monitoring data and transit schedules	Useful in analyzing trends, comparing alternatives or as an evaluation of the effectiveness of the Countywide Transportation Plan. Problems can be spotted for targeted investment. Can compare travel times via roadway and transit along major corridors.	Caution in a reliance on data collected on a few days each year which is not always representative of conditions throughout the year.

PERFOR- MANCE MEASURE	RTP GOAL	CWTP GOAL	OBJ. IN STATUTE	REQ'D DATA	HOW RESULTS CAN BE USED	CAUTIONARY NOTES CONCERNING DATA USE
Duration of Traffic Congestion	Reliability; Efficient Freight Travel; Security & Emergency Management	Enhance Economic Vitality (Expedite freight movement)	Economic Air Quality	Hours of Congestion at key locations	Could be used as trigger for certain traffic management strategies to contain congestion to normal peak periods to maintain smooth truck travel during mid-day.	Caution in a reliance on data collected on a few days each year which is not always representative of conditions throughout the year.
Roadway Maintenance	Maintenance & Safety; Efficient Freight Travel; Security & Emergency Management	Ensure serviceable operation of existing facilities	Economic	MTC's Pavement Condition Index	\$ amount of maintenance backlog for MTS roadways. Useful in guiding investment decisions for roadway maintenance needs.	Reliability dependent on subjective assumptions made by local agency staff. Assumptions can change annually depending on staff person conducting the estimate.
Roadway Accidents on Freeways	Maintenance & Safety; Efficient Freight Travel; Security & Emergency Management	Improve mobility, Ensure serviceable operation of existing facilities	Mobility Air Quality	Number of accidents/ number of miles; From Switzer/ TASIS System	Identify safety issues. Useful in guiding investment decisions.	Data not available for local streets/roads. Accidents may not be caused by physical facilities.
Completion of Countywide Bike Plan	Clean Air; Climate Protection; Equitable Access; Livable Communities	Improve Mobility, Air Quality	Mobility Air Quality	Miles and Percent Completion of Bikeway Plan	Progress toward a connective system of countywide bikeways	Does not reflect actual use of bicycle facilities.
Transit Routing	Reliability; Clean Air; Climate Protection; Equitable Access; Livable Communities	Improve transit access and Increase transit use	Mobility Air Quality Land Use	Current CMP requirement	To determine area coverage and proximity of transit service to residential areas and job centers.	Proximity to transit stops or stations is an important indicator of accessibility; however, the data is difficult to collect.
Transit Frequency	Reliability; Clean Air; Climate Protection; Equitable Access; Livable Communities	Improve transit access and Increase transit use	Mobility Air Quality Land Use	Current CMP requirement Number of lines operating at each frequency level	To determine convenience of transit service.	

PERFORMANCE MEASURE	RTP GOAL	CWTP GOAL	OBJ. IN STATUTE	REQ'D DATA	HOW RESULTS CAN BE USED	CAUTIONARY NOTES CONCERNING DATA USE
Coordination of Transit Service	Reliability; Clean Air; Climate Protection; Equitable Access; Livable Communities	Improve transit access and Increase transit use	Mobility Air Quality	Current CMP requirement	To determine reliability and convenience for travelers connecting between services.	Current CMP requirement does not provide much information.
Transit Ridership	Clean Air; Climate Protection; Equitable Access; Livable Communities	Increase transit use	Economic Air Quality Land Use	Number of patrons	Trend analysis; comparison between operators	Does a loss of transit ridership indicate that investment in transit should increase or decrease?
Transit Vehicle Maintenance	Maintenance & Safety; Clean Air; Climate Protection	Ensure serviceable operation of existing facilities	Air Quality	Mean time between Service Delays (BART) and Miles between Mechanical Road Calls (AC, LAVTA, Union City Transit)	Trend analysis; comparison between operators. Transit agencies have internal standards for comparison and investment allocation decisions.	
Transit Availability	Clean Air; Climate Protection; Equitable Access; Livable Communities	Increase availability and use of transit over time	Mobility Air Quality Land Use	Transit service frequency during peak periods and population at all transit stations in County	Determine mobility options available to Alameda County residents over time. Track as means of measuring efforts towards meeting climate change legislation.	Even with available transit options, this does not include the percentage of residents and employees that use transit. Population is based on census tract information, which is an approximation, not an exact correlation within one-half mile radius of stations.
Transit Capital Needs & Shortfall	Maintenance & Safety; Clean Air; Climate Protection; Equitable Access	Provide increased transit	Mobility Air Quality	Transit capital needs & Shortfall for high priority (Score 16) projects	Use transit capital needs gap to determine funding needs and investment options.	Measured every four years with the Regional Transportation Plan

DETAILS ON TRANSIT SERVICE PERFORMANCE MEASURES

The following transit service performance measures are derived from the service standards of the transit operators in the county, as expressed in their short-range transit plans or other policy documents.

Frequency

Table 10 shows performance measures for bus and rail transit in Alameda County. These measures apply to both existing services and future year (proposed) services.

For ferry services from Alameda and Oakland to San Francisco, the frequency measure is one vessel per hour during the a.m. and p.m. peak periods.

Routing

Performance measures for routing and area coverage vary by transit operator. AC Transit bases current and future year bus route spacing (the average distance between bus lines) on residential densities, the location of major activity centers, topography and street patterns. Route spacing in commercial areas is determined by location, level of activity and layout of the development, on a case-by-case basis.

For existing and future services, LAVTA proposes the following performance measures:

<ul style="list-style-type: none"> Expand routes and services to meet current and future demand for timely and reliable transit service 	
<p>Provide service with a time span that is sufficient to effectively serve the primary target markets for each route.</p>	<p>0400 - 0100 h/day or 24-h in backbone corridor(s); 0500-0000 on primary feeder lines; 0530-0900 and 1500-1900 on secondary feeder lines and regional routes; bell time for tripper lines.</p> <p>Ongoing</p>
<p>Provide trip frequencies that are sufficient to effectively serve the primary target markets for each route.</p>	<p>10/20 min in backbone corridor(s); 30/45 minutes on primary feeder lines; 30/60 min on secondary feeder lines; 60/0 min on regional routes; two daily trips for tripper lines. (peak/base)</p> <p>Ongoing</p>

For existing and future services, Union City Transit proposes the following performance measures:

- 90 percent of all land with three or more dwelling units per acre within one-quarter-mile of a transit route.
- 90 percent of major activity centers within one-eighth-mile of a transit route.

BART aims for a load factor (i.e., the number of persons on board divided by the number of seats) of 1.35 during peak periods. The average peak hour, peak direction transbay load factor for the four transbay

routes is currently above 1.35, and closer to 1.5. During the early 1990s, BART aimed for a peak period load factor of 1.15 and an off-peak load factor of 1. With the opening of the Dublin/Pleasanton line, the target load factor was adjusted to 1.35. Given current ridership trends and limitations on available rail cars, load factors will likely rise in 2008.

Table 10—Performance Measures for Frequency of Transit Service

SERVICE TYPE	TIME OF DAY				
	Peak	Midday (minutes between services)	Night	Owl	Sat/Sun/Holiday
Bus					
Primary Trunk	15	15	30	60	15
Secondary Trunk	15	30	30		30
Local	30	30	60		60
Suburban Local	45	60			
Transbay Basic	15	30	60		60
Transbay Express	30				
East Bay Express	30				
BART Express Bus*	60				
Rail					
BART	3.75-15		up to 20 (off-peak)**		
Ferries					
	60	60			60

* As of July 1, 1997, operating responsibility for BART express bus service was transferred from BART to local operators, i.e., LAVTA and County Connection, except for the service in the I-80 corridor. Responsibility for this service was transferred to WestCat on July 1, 1998.

**Starting September 2009, Saturday daytime service will be five routes with up to 15 minute headways and all other off-peak times (Week Night/Weekend Night/Sunday) will be three routes with 20 minute headways. The off-peak service will include service between San Francisco Airport and Millbrae.

Transit Service Coordination

A number of measures are in place to ensure coordination among transit operators, including SB 602, legislation preceding SB 602, MTC Resolution No. 3055 (Inter-operator Transit Coordination Implementation Plan) and others. All transit operators in Alameda County will continue to implement the coordination projects required under these guidelines. Annually, the projects are agreed upon among the operators and MTC. They relate to coordinating the following:

- Fare
- Schedule
- Service

- Public information
- Marketing
- Administration

Review Process

The CMA will prepare an annual transportation Performance Report for review by local agencies and transit operators prior to publication. The report will include the most current available data from various agencies. (The CMA will accept performance data that is up to two years old.)

The Performance Report includes estimates of population growth during the preceding year, available from the State Department of Finance. The 2007-08 Performance Report is available upon request at the CMA offices.

LOCAL GOVERNMENT AND TRANSIT AGENCY RESPONSIBILITIES

To minimize cost, the CMA will rely on established data collection processes and regularly published reports for data. A list of established data collection efforts, by agency, is listed below.

Cities and County

- Pavement Management System data for the MTS
- Countywide Bicycle Plan (County Public Works Department and CMA)

Transit Agencies

- Service Schedules, On-Time Performance
- Transit Ridership Routing (percentage of major centers served within 1/4-mile of a transit stop)
- Frequency (number of lines operating at each frequency level)
- Service Coordination (number of transfer centers)
- Average Time between Off-Loads (BART)
- Miles Between Mechanical Road Calls (AC Transit, LAVTA and Union City Transit)
Mean Time Between Service Delays (BART and ACE)
- Transit Availability (frequency of transit and population within one-half mile of rail station or bus and ferry stops and terminals)
- Transit Capital Needs & Shortfall (for High Priority – Score 16-transit projects for Alameda County transit operators)

MTC

- Roadway Maintenance Needs
- Freeway Congestion Monitoring data

Caltrans

- Freeway Speed Runs, Duration of Freeway Congestion (if developed by Caltrans)
- Accident Rates on State Freeways

CMA

- Roadway Speeds on CMP, except freeways
- Travel Times for O-D pairs

COMPLIANCE AND CONFORMANCE

Local agencies are encouraged to provide maintenance data to MTC or maintain their own database of maintenance needs on the MTS. However, there is no compliance requirements for local agencies or transit operators related to the Performance Element.

In the future, the CMA may consider using one or more performance measures in developing:

- Land Use Analysis Program: Tier II (review of cumulative effects of land developments)
- Environmental studies for transportation improvements
- Corridor studies
- The CMP Capital Improvement Program

CHAPTER FIVE

Travel-Demand Management Element

Continued economic and population growth in the Bay Area and Alameda County will place an increasing demand on the region's transportation system. Other chapters of the CMP focus on providing a sufficient supply of transportation facilities and services to meet projected demand. This chapter focuses on "demand-related" strategies designed to reduce the need for new highway facilities over the long-term and to make the most efficient possible use of existing facilities to integrate air quality planning requirements with transportation planning and programming.

Regionwide Travel-Demand Management (TDM) programs continue to evolve. This element takes steps toward tailoring such programs to the needs of Alameda County. State law requires that the trip-reduction and TDM Element:

- Promote alternative transportation methods, including but not limited to carpools, vanpools, transit, bicycles and park-and-ride lots;
- Promote improvements in the balance between jobs and housing;
- Promote other strategies, including but not limited to flexible work hours, telecommuting and parking management programs; and
- Consider parking cash-out programs.

The CMA and BAAQMD are required to coordinate the development of trip-reduction responsibilities and avoid duplication of responsibilities between agencies. However, cities and other local jurisdictions can establish their own TDM programs that go beyond what the CMA and BAAQMD develop, but they cannot require employers to implement an employee trip-reduction program unless the program is required by federal law.

ALTERNATIVE TRANSPORTATION METHODS

Both the public and private sectors should encourage the use of alternatives to the single-occupant automobile. By reducing the number of vehicle trips during commute periods, congestion can be reduced and vehicle miles traveled (VMT) under congested conditions can be decreased, thereby improving air quality.

Switching to buses or trains, increasing the number of occupants in each vehicle (autos, vans or buses), or increasing the number of people walking or bicycling will improve the efficiency of the transportation system, particularly during the system's peak periods.

The *Countywide Transportation Plan* recognizes the importance of alternative modes, especially transit. One of the goals of the plan is to improve transit access and increase transit use. In order to accomplish this goal, the plan places a priority on securing a reliable source of funding for transit investment and operations.

The following policies and programs—undertaken cooperatively by local government, the CMA, MTC, BAAQMD, Caltrans and the private sector—are intended to:

- Promote the use of transit, carpools, vanpools;
- Increase average vehicle occupancy;
- Encourage bicycling and walking as forms of transportation; and
- Encourage telecommuting to reduce commute travel demand.

INTEGRATING TDM AND CONGESTION MANAGEMENT

Historically, TDM has been isolated from the planning and programming mainstream. It has not been an integral aspect of plans for capital improvement or system management. Nor have individual TDM projects been appraised from a systems or corridor point of view.

Figure 10 shows how TDM activities can be conceptualized as an integral element of an overall strategy of congestion management. They overlap with transportation system management in coordinated implementation of HOV lanes and transit operating subsidies. They also overlap with capital improvements with investment in bicycle and pedestrian facilities, transit capital facilities and construction of HOV lanes, as well as operational improvements to freeways and roadways.

A Balanced travel-demand management Program

A balanced program requires actions that would be undertaken by local jurisdictions, the CMA, MTC, BAAQMD, Caltrans and local transit agencies.

The following policies represent a framework of realistic expectations for proposed actions that should be taken by the CMA and local governments as well as complementary actions that should be taken by regional and state agencies. The basic principle of the program is that travel-demand management activities should be effectively integrated with the CMP so that capital investment, system management and demand management can produce results that make a cumulative contribution to the CMA's efforts to contain congestion, provide alternatives to solo driving and sustain progress toward clean air.

Local Governments

Local governments should adopt site design guidelines that enhance transit and pedestrian and bicycle access. They should also work with transit agencies to establish bus shelters which display easily understood information about routes and schedules.

CMA

The CMP should provide a framework for integrating TDM, system management and capital investment in an overall strategy for containing congestion, reducing vehicular emissions and greenhouse gases, providing attractive alternatives to solo driving, and sustaining progress toward clean air.

The CMA's funding policies should encourage multi-jurisdictional projects, such as SMART Corridors, to promote seamless operations across jurisdictional boundaries, a multimodal approach to system management and system efficiency and safety.

MTC, CMA and BAAQMD

The CMA should seek maximum flexibility for providing its share of ridesharing funding. Historically, the CMA and MTC have funded the regional rideshare program.

Transit Agencies

Transit operators should continue to work with each other to develop cooperative plans for coordinating line-haul and feeder services.

Transit agencies should work with Caltrans to develop cooperative plans for HOV lane express bus service. They should also work with local governments to establish bus shelters that include clear route and schedule information.

ALAMEDA COUNTY TDM PROGRAM

The TDM program, as shown in Table 11, includes four programs, described below.

- a Required Program, which includes those actions local government must take in order to comply with the CMP;
- a Countywide Program, which includes those actions the CMA will take to support and supplement local efforts;
- a Regional Program, which includes those actions state and regional authorities should take to support travel-demand management programs areawide; and
- the Comprehensive Program includes all of the actions above, plus others that can be recommended for employers on an entirely voluntary basis.

Funding sources, lead agency and other partners are provided for each program. Taken together, they represent a fiscally realistic approach to effectively complement the CMA's overall CMP.

Required Program

The Required Program includes those actions local government *must* take in order to comply with the CMP. It requires local jurisdictions to adopt and implement guidelines for site design that enhance transit, pedestrian and bicycle access. Local jurisdictions can satisfy this requirement by:

- Adopting and implementing design strategies that encourage alternatives to automobile use through local development review prepared by ABAG and the BAAQMD;
- Adopting and implementing design guidelines that meet the individual needs of the local jurisdiction and maintain the intent of the TDM Element to reduce the dependence on single-occupant vehicles; and
- Demonstrating that existing policies meet the intent of the TDM Element to reduce the dependence on single-occupant vehicles.

In order to ensure consistency among all jurisdictions, a TDM Checklist was prepared identifying components that should be included in local design guidelines (Appendix D). The checklist was approved by the Board upon recommendation from ACTAC.

Local jurisdictions are also required to implement capital improvements that contribute to congestion management and emissions and greenhouse gas reduction. This requirement can be satisfied by participating in the state TFCA and the federal STP and CMAQ Program. The CIP incorporates numerous project types and programs that are identified in the Transportation Control Measures (TCM) Plan. The TCMs are listed in Appendix E.

Countywide Program

The Countywide Program includes actions the CMA will take to support the efforts of local jurisdictions. Actions may include financial incentives such as the Parking Cash-out Program, the Guaranteed Ride Home (GRH) Program and support of telecommuting. In February 2009, an evaluation of the GRH program was conducted. The recommendations, approved by the Board, included expanding the GRH program into a comprehensive Transportation Demand Management (TDM) program to support TOD development if new funding could be found and merging the GRH program with other GRH programs in the Bay Area. Expanding the TDM program would have the benefit of fulfilling the TDM requirement of the Congestion Management Program and would provide alternatives to the SOV, reduce vehicle miles traveled, and help in reducing greenhouse gases. Merging the GRH program with other GRH programs in the Bay Area would provide economies of scale in marketing and allow the opportunity to incorporate additional commute alternatives.

Regional Program

The Regional Program includes actions state and regional authorities should take to support TDM programs areawide. It also includes actions by MTC, BAAQMD and Caltrans to meet areawide needs. The regional program focuses primarily on financial support for those activities that ensure coordinated

transit, HOV lane use, development and/or maintenance of park-and-ride lots, ramp metering and arterial improvements, Americans with Disabilities Act (ADA) and bicycle and pedestrian improvements.

Comprehensive Program

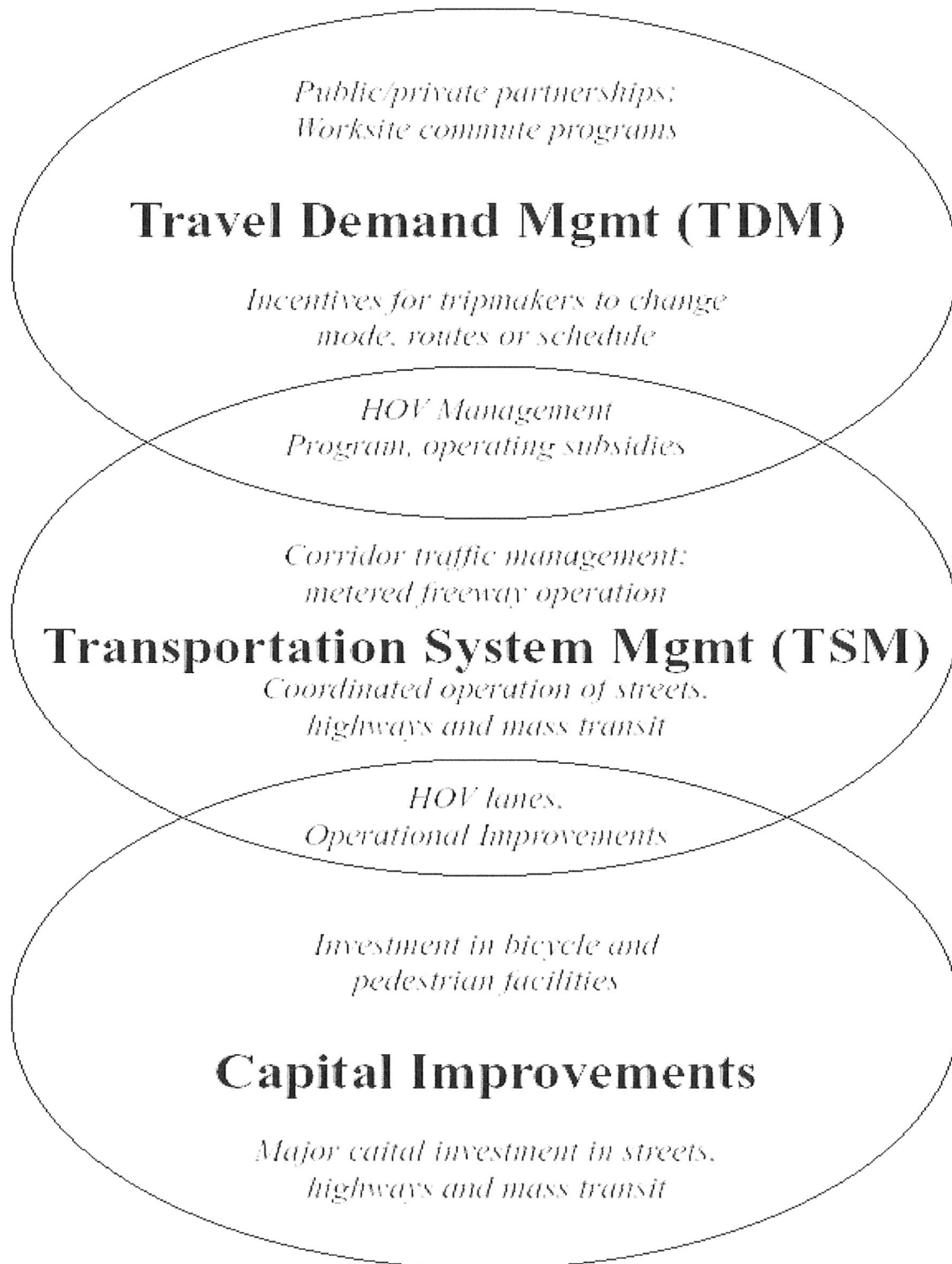
The Comprehensive Program includes all of the actions above. Recognizing that the private sector also has a role in TDM, the Comprehensive Program also includes actions that employers may take on a voluntary basis to promote and encourage alternative modes of travel.

Table 11—Travel-Demand Management Program

ELEMENTS	FUNDING SOURCES	LEAD AGENCY	OTHER PARTNERS
The Required Program			
Actions local government must take to comply with the CMP, namely, the implementation of:			
Site design guidelines that enhance transit/pedestrian/bicycle access	n/a	Local	Planners and developers
Capitol improvements that contribute to congestion relief and emissions reduction	TFCA, TSM, STP and FCR	Local, CMA	Neighboring cities, management and transit agency, cyclists
The Countywide Program			
Actions the CMA will take to support and supplement the efforts of local government:			
Guaranteed Ride Home, including merging the GRH program with other GRH programs in the Bay Area and expanding the GRH program into a comprehensive TDM program to support TOD development	TFCA	CMA	Taxis, other providers
Financial incentives for ridesharing and transit use	TBD	CMA	Local, employers
Telecommuting program	TBD	CMA (ABAG)	Local, employers
Support a long-term, stable and reliable source of funding for transit investment and operations	TBD	MTC, transit operators, CMA	Local

ELEMENTS	FUNDING SOURCES	LEAD AGENCY	OTHER PARTNERS
The Regional Program			
Actions state and regional authorities should take to meet areawide needs:			
Cooperative funding for regional ride-matching	TFCA, TDA Planning	CMA/AQMD/MTC	Employers
Regional ride home (to complement county program)	TFCA	MTC	CMA
Funding to implement transit coordination	STA, STP, TFCA	MTC	Transit operators
Funding for coordinated implementation of high-occupancy-vehicle lanes, express bus service and park-and-ride facilities	CR, TSM, STP, STA	Caltrans/MTC	Transit operators, CMA, local
Cooperative implementation of ramp metering and arterial improvements	TSM, STP	Caltrans	MTC, CMA
The Comprehensive Program			
All of the actions above, plus the voluntary efforts of employers other than city/county:			
Support Employer Transportation Managers Network	TFCA	Local	Local, employers
Transportation information for new employees	Private	Employers	Voluntary
Preferential parking for carpools, bicycles	Private	Employers	Voluntary
Flexible working hours	Private	Employers	Voluntary
Implementation of shuttle services where needed	TFCA	Employers/Local	Voluntary by cities, employers

Figure 10—TDM Strategy for Congestion Management



FUNDING TRIP-REDUCTION PROGRAMS

Transportation Fund for Clean Air

These laws permit the BAAQMD to collect a fee (up to \$4 per vehicle per year) for reducing air pollution from motor vehicles and for related planning and programs. The bill specifies the types of programs the fees may be used for as described below:

- Implementation of ridesharing programs (carpooling, vanpooling or transit; other trip-reduction projects, consistent with the county's adopted CMP).
- Purchase or lease of clean-fuel buses for school districts and transit operators.
- Provision of local feeder bus or shuttle service to rail and ferry stations and to airports.
- Implementation and maintenance of local arterial traffic management, including but not limited to signal timing, transit signal preemption, bus-stop relocation and "smart streets."
- Implementation of rail-bus integration and regional transit information systems.
- Implementation of low-emission and zero-emission vehicle programs, demonstration projects in telecommuting (with some restrictions) and in congestion pricing of highways, bridges and public transit.
- Implementation of smoking-vehicles program.
- Implementation of an automobile buy-back scrappage program operated by a governmental agency.
- Implementation of bicycle facility improvement projects that are included in an adopted countywide bicycle plan or CMP.
- Design and construction by local public agencies of physical improvements that support development projects that achieve motor-vehicle emission reductions. The projects and the physical improvements shall be identified in an approved area-specific plan, redevelopment plan, general plan or other similar plan.

Air quality legislation references the trip-reduction requirement in the CMP legislation and states that congestion management agencies in the Bay Area that are designated as TFCA program managers "shall ensure that those funds are expended as part of an overall program for improving air quality and for the purposes of this chapter (the CMP Statute)." The BAAQMD has interpreted this language to allow a wide variety of transportation control measures—including expansion of eligible transit, rail and ferry projects—to be eligible for funding.

- The TFCA legislation requires the BAAQMD to allocate 40 percent of the revenue to an overall program manager(s) in each county. The CMA has been designated the overall program manager in Alameda County. The CMA developed a program that allocates the funds as follows: A maximum of five percent of the funds for program implementation and administration.

- 70 percent of the remaining funds to cities/county based on population with a minimum of \$10,000 to each jurisdiction; city/county population will be updated annually based on State Department of Finance estimates.
- 30 percent of the remaining funds allocated to transit related projects; all eligible applicants may apply for these funds for transit-related projects.
- A city or the county, with CMA Board approval, may choose to roll its annual 70 percent allocation into a future program year. Any 70 percent funds not used by a city/county will be added to the available funds for the current year discretionary program.
- With CMA Board approval, a local jurisdiction may request programming of a multi-year project using its current and projected future year share of the 70 percent funds.

Surface Transportation Program

MTC and the CMA both perform administrative functions for programming STP funds. For TDM purposes, the following projects could be eligible for STP funds: highway projects including HOV lanes, signalization, transit projects and bike and pedestrian projects.

Congestion Mitigation and Air Quality Program

MTC and the CMA both perform administrative functions for programming CMAQ funds. For TDM purposes, projects that are eligible include those types of transportation projects that improve air quality, such as ridesharing, bicycle and pedestrian projects.

FINANCIAL INCENTIVE PROGRAM

A parking cash-out program is defined as an employer-funded program under which an employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space. Parking cash-out programs apply to employers of 50 or more persons in air basins designated as “non-attainment” areas. Parking subsidy is the difference between the out-of-pocket amount paid by an employer on a regular basis in order to secure an employee parking space not owned by the employer and the price, if any, charged to an employee for use of that space.

Demonstration Program

A demonstration financial incentives program for public agencies was implemented in Alameda County in 1997 for one year. The purpose of the demonstrations were to provide an opportunity for employees to choose alternative ways to get to work other than driving alone, to study the effectiveness of the program and to find out whether increasing the incentives available made a difference in program participation. The ultimate goal was to reduce single-occupant vehicle use.

The results showed that there is potential for changing commute choices if continuous sources of revenues could be found. Based on the results of these demonstration programs and guidelines developed by the California Air Resources Board, policies will be developed to guide the CMA’s implementation of

this component of the CMP. Although this section of the CMP describes programs funded by TFCA and the state Petroleum Violation Escrow Account, it should be noted that other jurisdictions in Alameda County provide transit subsidies or other types of financial incentives to their employees (e.g., City of Alameda, City of Pleasanton, City of Hayward STRIDES Program). The report on the 1997 Parking Cash-out Program is available upon request from the CMA.

DYNAMIC RIDESHARING

Dynamic ridesharing provides a new alternative to traditional ride-matching and carpool programs by maximizing flexibility and accommodating last minute requests for ride matches. Rather than commuters forming traditional daily carpools, dynamic ridesharing participants request ride matches only on days when they want to share a ride. The major benefits are that it requires minimal advance planning and accommodates changing travel times reducing the barriers to carpooling.

Pilot Project

In 2005 and 2006, the ACCMA in collaboration with EDF/RideNow!, Inc., implemented the dynamic ridesharing pilot project, known as RideNow²³, at the Dublin/Pleasanton BART station. It was funded by a grant from the Federal Highway Administration (FHWA) to implement, test and evaluate a dynamic ridesharing pilot project designed by RideNow, Inc.

RideNow is an automated system that enabled BART patrons to request carpool partners just minutes before they left home in the morning, or while on the BART train returning home in the evening. It provided both web and automated telephone (“Interactive Voice Response”) access for users. RideNow matched riders within a short time frame providing ‘instant matches’.

The Pilot project goals were to:

- Establish if dynamic ridesharing can provide a viable new travel option.
- Test the effectiveness of the program from a technical, administrative, marketing, cost and operational perspective.
- Assess the level of interest and usage in the program and evaluate its benefits and limitations.
- Determine the feasibility and applicability of expanding the program beyond the duration of the pilot project as well as to other locations within Alameda County or the San Francisco Bay region.

Based on feedback from participants and the participating agencies, the program did have value for people who desire to carpool, but have complex commutes that do not permit participation in more traditional carpool programs. However, more information is needed about how many people would be attracted to this type of flexible program compared to other ridesharing or TDM programs designed to get people out of their single occupant vehicles and if the program would be cost effective. Both agencies and program participants believe that if the program were continued it would need to be substantially

²³ The name RideNow is used by permission by RideNow! Inc.

simplified and that increased marketing activities to target audiences and more time to build volume would be needed.

CONGESTION PRICING STRATEGIES

In 2002, the CMA secured funding from MTC, Caltrans and the FHWA to conduct a feasibility study for a high-occupancy toll lane in the I-680 corridor (now known as Smart Carpool Lane). The study evaluated a number of pricing options and analyzed a number of key factors such as physical constraints, institutional opportunities and constraints, operational issues and revenue potential. The study concluded in April 2003, found that a Smart carpool lane would be operationally, physically and financially feasible.

Subsequently, AB 2032 (Dutra, 2004) authorized implementation of the I-680 HOT lane (also known as Smart Carpool Lane). The project is currently in construction is expected to be in open to traffic in Fall 2010. The legislation also approved a second HOT lane in the County. The CMA Board approved I-580 as a candidate corridor, and it is currently in design. The I-580 HOT lanes are anticipated to be open to traffic in Summer 2011.

The CMA will continue to investigate the following pricing concepts: off-peak transit fare discounts and parking ticket surcharges by Alameda County jurisdictions with revenues to be used for transit. Initially, Free Transit on Spare the Air Days, another pricing concept, was to be investigated for implementation by the ACCMA. However, considering the regional nature of the issue, in 2006, MTC in partnership with BAAQMD and 24 transit operators across nine Bay Area counties launched “Spare the Air/Free Transit Program”. In 2006 through 2008, transit fares were free during three to four non-holiday “Spare the Air” weekdays. Starting in 2009, the Spare the Air Day campaign will still be in effect, but because of lack of funding Free Transit Days will no longer be offered.

COMPLIANCE/CONFORMANCE

The CMA must annually monitor conformance with the adopted CMP. Among other requirements, the CMA must determine if each city and the county has adopted and implemented a trip-reduction and travel-demand ordinance. In the early 1990s, a transportation control measure in the region’s Clean Air Plan required employers with 100 or more employees to conduct activities to encourage an increase in the use of alternatives to driving alone. BAAQMD oversaw implementation of this program; however, later legislation prohibited mandatory employer-based trip-reduction programs. The CMA therefore cannot require such programs in determining whether cities or the county are in compliance with the CMP.

Local jurisdictions shall have until September 1 of each year to adopt and implement the Required Program, which focused on adoption and implementation of site-design guidelines and adoption and implementation of a Capital Improvement Program.

If the CMA finds that a local jurisdiction has not adopted and implemented the Required Program, it may find the local jurisdiction in “non-conformance.” At the time of the finding, the CMA would provide recommendations for corrective actions. If after 90 days the local jurisdiction is still in non-conformance,

the CMA is required to provide notice to the CTC and the State Controller. The notice includes the reasons for the finding and evidence that the CMA correctly followed procedures for making the determination.

The State Controller would then withhold the non-conforming jurisdiction's increment of subventions from the fuel tax made available by Proposition 111, and the jurisdiction will not be eligible to receive funding for projects through the federal STP and CMAQ Program.

If within the 12-month period following the receipt of a notice of non-conformance, the CMA determines that the city or county is in conformance, the withheld Proposition 111 funds will be released. If after the 12-month period the city or county has not conformed, the withheld Proposition 111 funds will be released to the CMA for projects of regional significance included in the CMP or a deficiency plan.

LOCAL GOVERNMENT RESPONSIBILITIES

In order to be found in conformance with the CMP, local jurisdictions must:

- By September 1 of each year, certify to the CMA that it has adopted and implemented site design guidelines that enhance transit/pedestrian access and implemented capital improvements that contribute to congestion management and emissions reduction.
- Local jurisdictions have until September 1 of each year to adopt and implement the Required Program.